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The Citrus Industry

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**Citrus Insect Control
For April, 1958 . . .**

The Big Job Ahead

Citrus Crops As Of March 1

**Federal Citrus Crop Insurance
Program Is Extended**

**Committee Urges Research To
Reduce Hazard of Freeze
Damage**

**Fertilization, Irrigation And
Pruning Of Cold In-
jured Groves**

**Florida Fresh Fruit Standards
Show Promise**

**Relations Between Moisture
Conditions And Rust Mite
Infestations**

**All-Industry Committee Ap-
pointed by Chm. Scales**

**Plant Board Begins Nursery
Regulations Against
Nematodes**

What's In Grapefruit?

**What The Freeze Will Mean
To The Future Of The
Citrus Industry**



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In virtually every growing business or industry today research is constantly at work seeking out new and better practices to improve and to increase production.

So in the citrus industry, announcements recently made, report the appropriation of substantial sums of money to carry on research which is designed to make Florida's citrus groves more resistant to cold weather.

This policy, coupled with the innovations which have been inaugurated during the past few years to improve cultural practices, to step up production and develop finer fruit, bespeak the aggressive intelligence of those who guide the destinies of Florida's great industry.

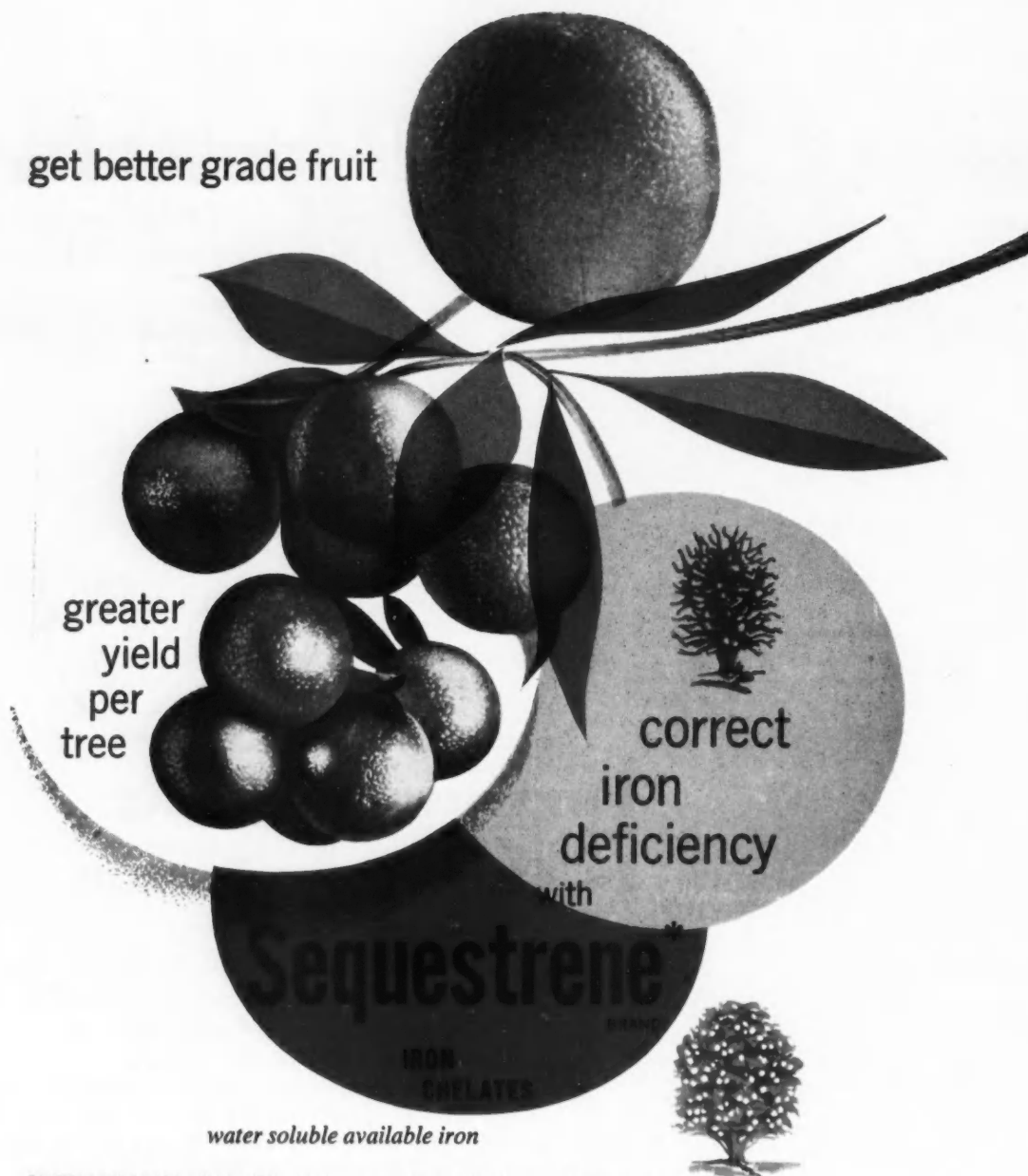
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R. M. Pratt

Citrus Insect Control



R. B. Johnson

For April
1958

R. B. JOHNSON*
R. M. PRATT
W. L. THOMPSON
Florida Citrus Experiment
Station, Lake Alfred



W. L. Thompson

Citrus insects and mites were generally inactive during the cold weather, but with the return of warm weather infestations are beginning to increase.

Purple scale eggs started hatching early in March, and the hatch will reach a peak after the middle of April. Experience in earlier freezes indicates that purple scale will become severe, especially in damaged trees.

The red scale population was drastically reduced by the freezing weather and only a few groves are still infested. Most of these are in the Indian River and lower Ridge districts. Hatching began in the second week in March, and populations will increase in infested groves, but this scale will not be a general problem this spring. By fall, however, red scale will be abundant in the warmer areas.

Six-spotted mites are expected to be abundant following the cold winter. The population has been increasing since January, and infestations are being found on the new foliage. Most groves have no leaves to spare, and defoliation by six-spotted mite should not be permitted. Injury is most severe on grapefruit trees.

Purple mites are also expected to be more abundant than usual and infestations have increased sharply in March. However, if rainfall continues above average the increase in mite population will be less rapid. Infestations of Texas citrus mite will also be numerous in the post-bloom period.

In recent years rust mite has not been a problem before May or June, but this mite is favored by moist weather. If the spring is wetter than usual, an early buildup may be expected.

Because there was practically no new growth before March, aphids are not expected to be a problem this

year except in some tangerines and Temples, and a few young groves. This is in marked contrast to last year when there was new growth on many trees from January through spring, permitting many generations of aphids to develop.

SPRAY PROGRAM

Last month we wrote about the management of the spray program during the pre-bloom period in March on the theory that most groves would not be ready for the post-

groves this basic spray can be supplemented or modified to take care of other problems which will have to be determined by grove inspection.

Melanose and Scab Control: Melanose and scab are two diseases that should be controlled on all crops that are being grown for the fresh fruit market. Both are a definite grade-lowering factor, and when severe will reduce the size of the fruit. Melanose is a grade-lowering factor on all varieties while scab is

SCALE AND MITE ACTIVITY BY DISTRICTS*

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves	Mite on fruit
West Coast	3.24	.35	.50	1.78	2.10
Indian River	2.66	.05	1.77	1.38	.57
Upper East Coast	2.29	0	2.29	.57	0
Gainesville	1.83	— .33	— .17	.17	0
Orlando	1.85	.04	.36	.04	0
Brooksville	1.97	.06	1.13	1.22	2.00
Ridge	2.39	1.14	1.37	1.00	.67
Bartow	3.48	.10	1.30	1.88	1.75
State Average	2.45	1.08	1.05	.96	1.11
Last Year	4.26	3.85	1.42	1.36	1.22

*Second week in March. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

bloom spray until some time in April. This seems to have been a reasonable assumption. It is still difficult to predict just when most post-bloom spraying will begin, but at least some of the groves that were not damaged or were only slightly damaged by the numerous freezes of last winter will be ready in early April. Moderately to severely damaged groves are more retarded and will not need post-bloom sprays until mid-April or even later.

The post-bloom spray is most important for the control of melanose and rust mite every year, but this year two other problems are equally important in some groves. These two additional problems are purple scale and six-spotted mite. More about these later.

In general, the basic post-bloom spray should include a copper compound for melanose and/or scab and greasy spot control, plus sulfur for rust mite. Because other control measures will be needed in some

serious only on Temples, tangelos, and lemons, and is occasionally a problem on grapefruit and tangerines. Scab may cause young fruits to drop. Scab and melanose also infest foliage and the latter may cause a severe leaf drop. It is therefore advisable to control melanose on the foliage especially of freeze-damaged trees.

Timing of scab and melanose sprays is very important for food control. The best time to put on sprays for scab control is when about two-thirds of the petals have dropped. This timing should be used on scab-susceptible varieties and will give some control of melanose. The best time to apply melanose sprays, however, is 1 to 3 weeks after petal fall, but this timing is not always possible. Where large acreages must be sprayed it is usually not possible to finish spraying in this limited time. Where this is the case, it is best to start spraying early using the timing for scabs when about

*Written March 20, 1958. Reports of surveys by Harold Holtsberg, Fort Pierce; J. W. Davis, Tavares; K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. M. Sutton, Lake Alfred.

two-thirds of the petals have dropped.

During wet spring or where the bloom is scattered over several weeks one application will not be enough. Under these conditions a second spray will be needed about four weeks after the first.

The best material for scab and mealy control is a neutral copper compound. Zineb and other substitutes are not satisfactory. Use enough of the neutral copper compound to give 3/4 pound of metallic copper per 100 gallons.

Do not use lime-sulfur with copper compounds because such mixtures have occasionally given a very severe burn on both leaves and fruit and have caused both to drop. On the other hand, the addition of 0.7 percent oil emulsion to neutral copper sprays will help to spread and stick the copper and will give good control of purple mite, Texas citrus mite, and six-spotted mite. Where purple scale, purple mite, Texas citrus mite, or six-spotted mite, and mealy are all a problem, 1.3 percent oil emulsion may be used with the copper. However, do not use oil in the post-bloom spray if you plan to use oil in the summer; and remember that oil sprays are not effective against rust mite.

Rust Mite Control: Rust mite control is needed during the post-bloom period or shortly after to prevent early rust mite injury to the fruit and excessive damage to the foliage. For this purpose there is a choice of four different materials and several programs. The materials are sulfur, lime-sulfur, zineb and Chlorobenzilate. For several reasons sulfur seems to be preferable, although there are some exceptions to this statement.

Most growers are planning to use copper compounds and this is highly advisable. It is currently preferable to use sulfur with copper compounds except where oil is also to be included. The reason for this is that we know copper compounds may reduce the effectiveness of zineb, but we do not know how much its effectiveness may be reduced. Therefore, until we know more about what to expect from post-bloom copper-zineb sprays, it is best to use sulfur. There is another argument in favor of sulfur. The broad mite, which occasionally seriously disfigures fruit in the post-bloom period is controlled by sulfur, but we doubt if zineb is effective against this mite. Wettable sulfur should be used at 10 pounds per 100 gallons, unless combined with parathion, in which case 5 pounds is sufficient because more gallons of spray will be applied.

Where oil emulsion of any kind and in any dosage is used, of course sulfur cannot be employed. In this case, the oil spray should be followed in about 3 or 4 weeks by a sulfur spray or dust. The alternative to this is to include 1/2 pound of zineb with the oil or 1 pound of zineb with the copper-oil, but remember that although these sprays will be better than sulfur, they may not give rust mite control from post-bloom until time for the summer scaleicide.

Lime-sulfur is satisfactory for rust mite control. Do not use it with copper or oil sprays, however, and

do not use it on tangerines or young succulent foliage during hot weather when wettable sulfur is safer. Lime-sulfur should be used at 1 gallon plus 5 pounds of wettable sulfur per 100 gallons.

Chlorobenzilate (Ethyl 4,4 Dichlorobenzilate) has been tested on Florida citrus for about two years, but has seen very little commercial use. In all trials it has given as good control of rust mite as wettable sulfur and in most cases has been superior. It is not, however, quite as effective as zineb. Chlorobenzilate has been used in oil emulsion

(Continued on page 25)

ASPLUNDH BRUSH CHIPPERS



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And safer to use, and give you a cleaner and faster method of removing brush and pruned limbs. In view of the cleaning up job which is going to have to be done in most citrus groves over the state very soon, you will find the ASPLUNDH CHIPPER the Fastest and by far the most Economical means of handling the job.

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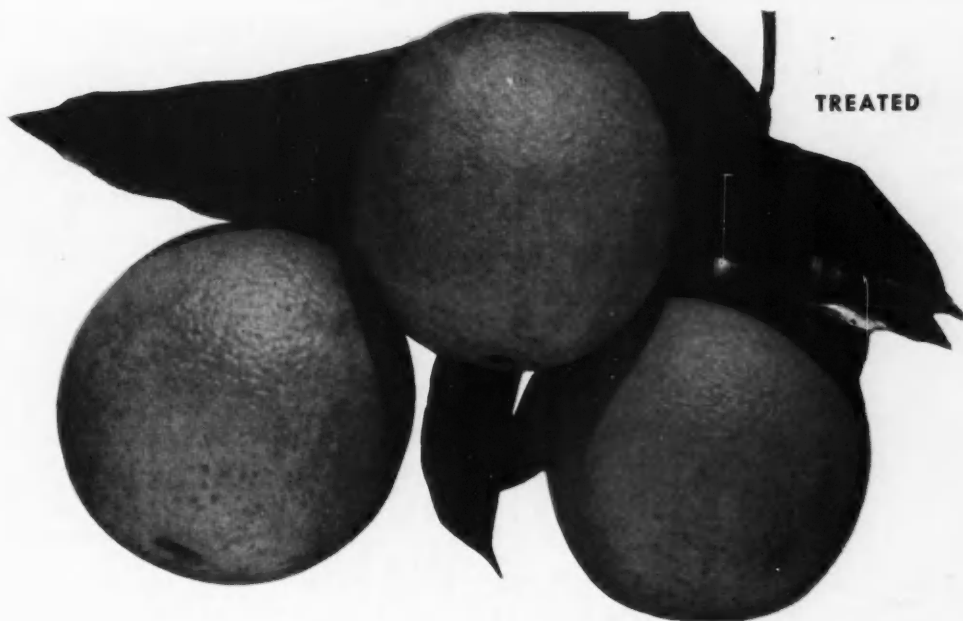
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Use DITHANE Z-78 instead of sulfur in post-bloom sprays to control rust mites. Important advantages of DITHANE Z-78 are:

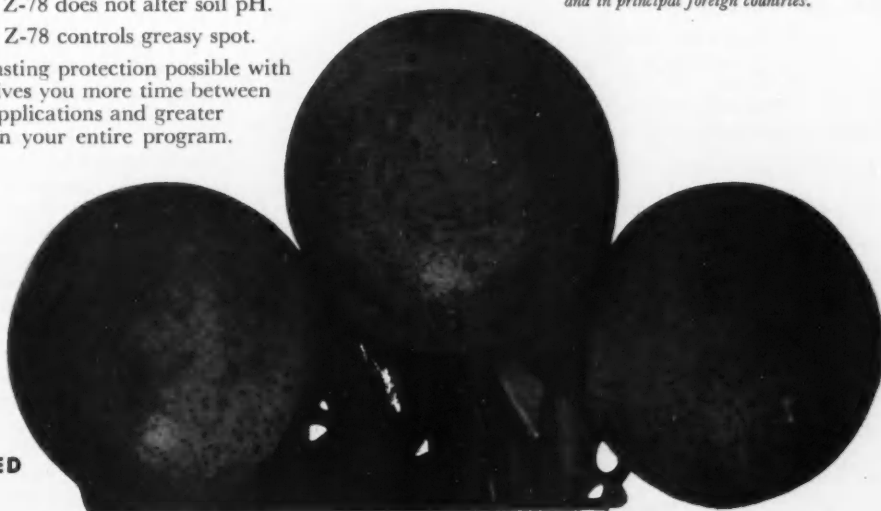
- DITHANE Z-78 gives protection that can last until summer scalicide is needed. There is no need to apply extra sulfur dusts or sprays before summer to keep rust mites in check.
- DITHANE Z-78 is more persistent during rainy weather.
- DITHANE Z-78 is easy and mild on tender growth. It is the ideal warm weather fungicide.
- DITHANE Z-78 does not alter soil pH.
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UNTREATED



TIME TO TAKE ADVANTAGE OF W&T's KNOWLEDGE AND EXPERIENCE

Citrus surveys show a greater damage to trees than was first thought immediately after the several freezes. With the past season's crop pretty well utilized, attention should now be focused on the production of another crop of fruit where groves had a satisfactory bloom, as prices are expected to be good next year.

For the many thousands of acres of trees which have lost their foliage, received severe wood damage and had no bloom, the most essential thing now is to restore normal leaves as quickly as possible. Leaves store plant food that manufactures the sugar that produces fruit.

More important than ever before is your grove's need for a well-balanced fertilizer program, backed by W & T's knowledge and experience gained through the years since before the first record blast of 1899. More important than ever before is your need for the extra-quality of Ideal Fertilizers.

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Citrus Commission Voices Approval Of Research Program

The Florida Citrus Commission gave its wholehearted support to a research plan to make citrus trees more resistant to cold weather.

At its regular monthly meeting, the Commission heard a report from Commissioner Marvin Walker of Lake Wales that such a program was contemplated for Florida, California and Texas. Walker, who heads the U. S. Department of Agriculture's Citrus and Sub-Tropical Fruit Research and Marketing advisory Committee, said the USDA research project would cost an estimated \$185,000 with about two-thirds of this earmarked for Florida.

The Commission, by unanimous vote, endorsed the program.

Walker said his Committee, at a recent meeting in Washington, had recommended the program, funds for which would be provided by the Federal government. He said the problem now was "to get the money for the project since it was not included in the Department of Agriculture appropriation bill before Congress." He added that Congressman Syd Herlong was undertaking to have the matter introduced in Congress and hoped to get the support of California and Texas.

"The Florida Citrus Commission is strongly supporting this project and is contacting the Florida Congressional delegation urging their endorsement," said General Manager Homer E. Hooks. "The project is of vast importance to Florida because of recent freezes and the knowledge to be derived from such research will aid immeasurably in combating future cold weather damage."

Under the plan, scientists would breed and cross-breed citrus root stocks and varieties in order to develop an orange tree that would be more rugged during extreme cold spells. The Commission, in cooperation with the Citrus Experiment Station, is presently conducting studies of freeze damaged fruit.

"The two studies will complement each other," said Dr. L. G. MacDowell, director of research for the Commission, when asked if there would be duplication. "Present studies at the Experiment Station are concerned with utilization of freeze-damaged fruit while the proposed research would be on root stocks and varieties."



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Fertilization, Irrigation And Pruning Of Cold Injured Groves

Speaking before the annual meeting of the Florida Citrus Production Credit Association in Orlando, March 6th, Dr. Herman J. Reitz dwelt upon the proper procedures to follow in the treatment of cold-damaged groves in fertilization, irrigation and pruning.

He states that most groves were in exceptionally good condition prior to the Dec. 12 freeze due to the fact that most of them had been properly fertilized and cared for and as a result were in good condition to withstand the abnormal cold weather both during the December freeze and the other cold spells which followed in January and in February.

Probably the most redeeming feature of the entire situation, stated Dr. Reitz, was that after the first freezing weather in December the weather continued cold. "Had the December freeze been followed by a period of warm weather the results would have been disastrous," he said.

Trees which have suffered little damage or defoliation, said the speaker, could be treated as usual insofar as fertilization was concerned. The prevalent rains, he indicated, have taken care of all irrigation requirements at present, while pruning should be postponed until the first flush of leaves has hardened up.



DR. HERMAN J. REITZ
HORTICULTURIST IN CHARGE
CITRUS EXPERIMENT STATION
LAKE ALFRED

Following this suggestion, he said, would prevent the necessity of pruning a second time and eliminate the danger of cutting off wood which might not be damaged.

Second Application Recommended

Dr. Reitz stated that in order to bring groves back to normal as quickly as possible, especially those trees which showed relatively little damage, he would recommend two applications of fertilizer before July 1. One application should be made as soon as possible and another in May. This course, he stated, would provide greater flexibility in the management of trees, and hasten their return to a normal condition than if only one application were used.

Without being too specific Dr. Reitz suggested that on trees with comparatively little damage growers should continue the use of regular mixtures which have proved successful on individual groves in the past. This practice, he opined, should bring their groves up to a condition similar to their normal state by the end of the year. Each grower should check his own grove carefully for deficiencies and provide trees with needed elements.

This program should be modified on trees where there is as much as 50 percent defoliation, when fertilization should be reduced to about one-half of former applications.

While fertilization is not the sole determining factor in the recovery of damaged trees Dr. Reitz indicated it was a most important factor.

Following the fertilization appli-

cations which should be made now, he recommended that another application should be made this summer based upon the condition of the trees at that time.

Treatment of Damaged Trees

On trees which were damaged the most and where much wood damage is apparent he stated these trees should be fertilized but that the application be drastically reduced from the normal practice. A small application was recommended at the present time, and condition of the trees should govern the type and amount of a summer fertilization program.

Practically all trees, he stated, need a spray program of zinc, while some need manganese. This is a year, he said, for citrus growers to determine how skilled they might be as citriculturists.

A major objective of all growers is to keep the leaves on their trees green. A close watch of the leaves will enable the grower to readily determine deficiencies which may exist and enable them to readily correct such deficiencies, and enable them to keep leaves in a normal, healthy green condition.

He discouraged pruning at this time of the year. Contrary to some opinions he asserted that presence of dead wood due to cold does not damage if left in the trees for a opinion he asserted that presence of dead wood due to cold does not be cut off, while if the apparently dead wood were left on the trees a certain percentage of it might respond later.

Trees, he said, should be pruned after new spring flush leaves had matured and the dead wood had become clearly defined, when it could be pruned and the necessity of a second pruning job would be eliminated.

Of course, said Dr. Reitz, it is entirely possible to wait too long to prune one's trees and permit the tree to fill out to an extent where the dead wood would be unnecessarily hard to remove, but most growers, he asserted, would know how to handle this procedure.

Seldom, if ever, stated Dr. Reitz, have Florida's citrus groves needed more concentrated and skilled attention than right now, but added if proper care is taken the great majority of the trees which escaped too serious damage should be back in near normal production by another season or two, while trees more seriously damaged will return to

Citrus Crops . . . As Of March 1

BY

ZACK SAVAGE

AGRICULTURIST ECONOMIST

AGRICULTURAL EXPERIMENT
STATION

Citrus production for the 1957-58 season is below both last year and the average for the 10 seasons of 1946-55, according to the Crop Reporting Service, AMS, USDA.

Oranges and Tangerines

The 1957-58 orange and tangerine crop is estimated at 116 million boxes in the U. S. and is the smallest crop since 1949-50. This crop is 15 percent below last year and 5 percent below average. Production is down from last season in both Florida and California. The combined orange and tangerine crop in Florida is estimated at 87 million boxes, the smallest since the 1952-53 crop, while the California crop is the smallest since the 1929-30 season.

The estimated production of early and midseason oranges is 65.9 million in the U. S., which is 8 percent less than last season but 13 percent above average. Due to much of the freeze damaged fruit being salvaged, the Florida crop of 54 million boxes is nearly the same as the previous season. In California, the crop of Navels is nearly 6 million boxes smaller than last year. The production of tangerines is estimated at 2.4 million boxes, only half of the crop last season. Production of Valencias, estimated at 47.4 million boxes, is 22 percent below last year in the U. S. and 20 percent below average. In Florida the crop is 7.7 million boxes smaller than last season and in California is down 5.5 million. Both Texas and Arizona have increases over 1956-57 in Valencia production.

Florida has about finished picking early and midseason oranges and has started on Valencias. Harvest of California Navels is more than

normalcy much faster if they are provided the most careful attention.

He stated that the staff of the Citrus Experiment Station would offer every possible service to assist all Florida citrus growers.

half finished, but harvest of Valencias in Central California will not begin until about April 1. Harvest of tangerines in Florida is practically complete.

Utilization of oranges to March 1 totaled 66 million boxes in the U. S. compared with 61 million at the same date a year ago. However, it is estimated that only 47 million boxes remain to be harvested. A year ago there were 71 million boxes unharvested at that time. Utilization of the crop for fresh market came to 23 million boxes or 7 percent fewer than at the same date a year ago, but utilization for processing is running 18 percent ahead of last season, with 43 million boxes from the 1957-58 crop processed by March 1. The sharp increase over last season in the utilization of the crop occurred in Florida where every effort was made to salvage freeze-damaged fruit. In Florida, 52.7 million boxes out of an estimated 54 million box crop of early and midseason oranges had been utilized by March 1. Of this quantity, 40.8 million boxes went to processors. By March 1, 4 million boxes of Florida Valencias had been harvested, compared to only 1.7 million a year earlier. In California, 6.7 million boxes of oranges had been utilized by March 1, or 28 percent of the estimated crop. A year ago, 7.6 million boxes had been used by the same date but that was only 21 percent of the crop.

Grapefruit

Grapefruit production in the U. S. is estimated at 40.8 million boxes, 9 percent below last season and 12 percent below average. This is the smallest crop since the 1952-53 season. The Florida crop is 5.4 million boxes smaller than last season with seedless varieties down 3.1 million and other varieties down 2.3 million. The California crop is down 4 percent from last season. Production in the desert valleys is up slightly but is more than offset by a decline in other areas.

As of March 1, 28 million boxes of grapefruit had been utilized in the U. S. compared to 24 million a year ago. Approximately 12.4 million remained for harvest, whereas, a year ago 21 million were still unharvested. Utilization of the crop for fresh

(Continued on Page Twenty-nine)

Relations Between Moisture Conditions And Rust Mite Infestations⁽¹⁾

In the past seventy years, a number of authors have commented on the seasonal abundance of citrus rust mite, *Phyllocoptura oleivora* (Ashm.), and on factors influencing abundance. In 1885, Hubbard (2) stated that rust mite infestations begin in early summer and continue until late autumn, with the most rapid increase in August and September. He observed that following the drought of 1881 and 1882, the fruit was unusually free of russet in the season of 1882-83.

Speare and Yothers (6) stated in 1924 that it had been observed since 1912 that rust mite populations reach a maximum just after the rainy season begins, with the highest population occurring in late June or early July. Yothers and Mason (8) in 1930 reported that the most rapid increase in rust mite infestations occurred in May and June, with the maximum being reached in late June or early July. They found that the highest level might be reached as early as May or as late as the end of July. They also noted that rust mites did not multiply during the drought in the spring of 1922, but increased rapidly after a rain on May 4.

Watson and Berger (7) stated in 1937 that "mites multiply most rapidly during dry weather, so it is during dry weather or immediately following droughts that an especially vigilant watch should be kept for rust mites. The month of June is, if a number of years be averaged, most likely to bring a heavy infestation. But the mites are liable to cause damage any month of the year."

In the present study, more complete records of population trends have been available than heretofore, so a more definite comparison between rust mite populations and weather conditions can be made.

Detailed records of rust mite infestations have been kept for seven years, as part of a continuing ecological study of insect and mite populations. Counts are made at monthly intervals in 130 representative citrus groves. These groves are located in the 22 counties in which 95 per-



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FLORIDA CITRUS EXPERIMENT
STATION, LAKE ALFRED

cent of the citrus industry of Florida is located. In each grove, 20 leaves and 20 fruits on each of five trees are examined with a 10X hand lens. One lens field on either side of the leaves, and on the exposed and unexposed sides of the fruit are examined and the percent of leaves and fruit infested is recorded.

A tabulation is made each week in which the percent of infested leaves and fruit recorded from all the groves in the previous four weeks is computed. In addition, an index of activity, based on the population, and the number of groves in which there was an increase or decrease since the previous count, is calculated.

Data on weather conditions are available from the U. S. Weather Bureau and from five hygrothermograph stations located at Tavares, Merritt Island, Lutz, Avon Park, and Lake Alfred.

Examination of graphs portraying the rust mite populations since the fall of 1950 revealed that there are two peaks of infestation each year, one occurring during the summer rainy season and the other in the late fall or winter (Table 1). The

time of the summer peak has varied from the first week in July to the last week in September, but it usually occurs between late July and mid-August.

The winter maximum occurs between mid-November and early January. The maximum population in the summer, usually, but not always exceeds the maximum in the winter. In the summer, rust mites are more abundant on the fruit, but in the winter, they are more abundant on the leaves. In most years, the population peaks occur on leaves and fruit at the same time, but in some years, there has been a difference of one or two weeks. During most of the year, the difference between the average infestation on leaves and the infestation on fruit is small, but in the summer, near the time of the maximum infestation, the infestation on fruit is likely to be considerably higher.

For comparison with population cycles, a graph was prepared showing the weekly mean temperature, the weekly rainfall total, and the average number of hours at the dew points by week. An examination of this graph indicated that there was no consistent relation between the average infestation of rust mite and temperature or inches of rain, because the secondary population maximum occurs in the winter when both temperature and rainfall are low. However, there did appear to be a close relation to the number of hours at the dew point (100 percent relative humidity). A portion of this record is shown in Figure 1.

The correlation between rust mite infestations as measured by the activity index and the percent of leaves infested was computed for 311 weeks ending in June, 1957. Data for leaves were used because the record is continuous, and fruit counts

Table 1
Maximum Rust Mite Infestation
Summer Maximum Winter Maximum

Year	Leaves		Fruit		Leaves		Fruit	
	Date	% Inf.	Date	% Inf.	Date	% Inf.	Date	% Inf.
1951-52	2 Aug.*	9.5	3 Aug.	15.1	1 Jan.	15.5	1 Jan.	11.2
1952-53	4 Sept.	15.7	4 Sept.	21.0	1 Dec.	18.6	1 Dec.	16.2
1953-54	3 July	25.4	1 July	26.9	4 Nov.	23.9	4 Nov.	22.0
1954-55	1 Aug.	16.8	3 Aug.	24.7	1 Dec.	17.3	1 Dec.	15.4
1955-56	3 Aug.	17.6	3 Aug.	28.0	1 Jan.	19.6	1 Jan.	18.9
1956-57	2 Aug.	28.4	2 Aug.	38.0	2 Nov.	25.6	2 Nov.	26.8
1957-	4 July	35.6	4 July	37.6				

*Indicates week in which maximum infestation occurred.

(1) Florida Agricultural Experiment Station Journal Series.

are not made in April. Results of these calculations are given in Table 2.

The correlation between rust mites, as measured by either activity index or percent of leaves infested, and

begins in cool weather when there is also an increase in the number of hours at the dew point and fog and heavy dews occur frequently.

Thus it is evident that moist conditions are favorable to increases

increasing trend did not begin before June, when moisture became more abundant.

Spear and Yothers (6) reported in 1924 that "Shortly after the point of maximum infestation is reached the mites disappear as if by magic, so by the middle or end of September it is nearly impossible to find a single mite present." They attributed this rapid disappearance of the rust mite population to a fungus disease. Fisher (1) has described a fungus, associated with dead mites similar to those described by Speare and Yothers, as *Hirsutella Thompsonii* Fisher.

Because a high mortality does not occur until some weeks after the onset of the rainy season, this fungus disease does not appear to be particularly responsive to the presence of moisture. Muma (3) has shown that the abundance of the disease is dependent on the number of rust mites present.

In the last seven years, it has been observed that the highest mite populations occur in the years when the increasing trend in the late spring or early summer is most rapid.

Once a declining trend in mite population is established, it usually continues until a low level is reached. Following the next dry spell, the population again starts to increase.

SUMMARY

Rust mite populations reach a maximum in the summer well after the beginning of the rainy season, with the peak usually occurring in late July or early August. A secondary maximum is reached between November and early January.

Moist weather, as measured by the number of hours at the dew point, is favorable to the increase in rust mite population.

Maximum population levels are reached during the summer rainy season, and the winter period of moderate rain, fog, and heavy dew.

There is no correlation between the population level and rainfall as such.

Mortality following peak populations has been attributed to a fungus (Continued on Page Seventeen)

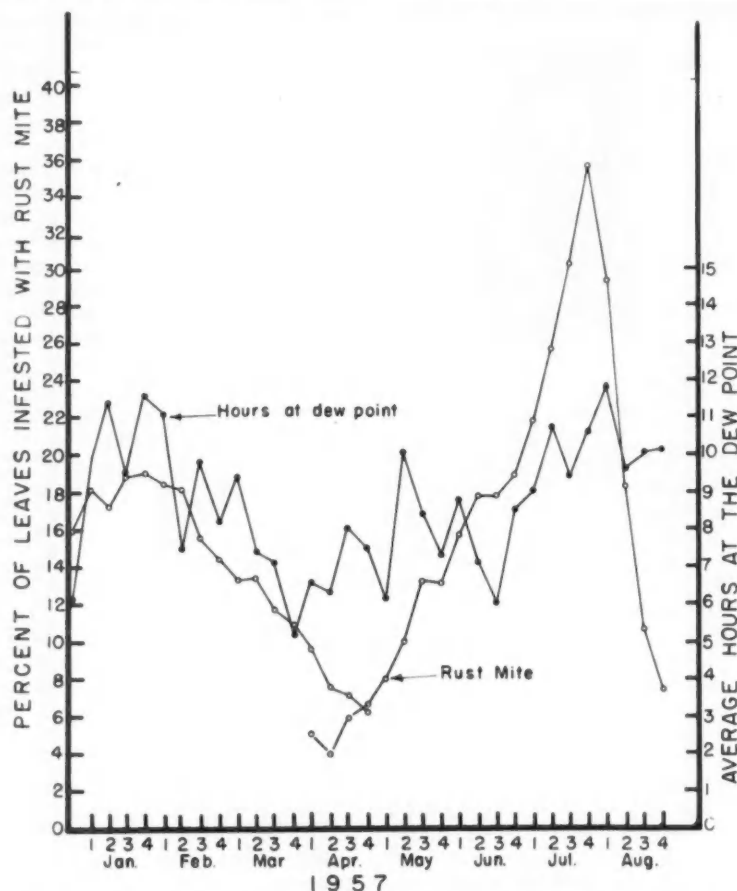


Figure 1.—Comparison of Rust Mite Population and Number of Hours at the Dew Point, for a portion of 1957

the number of hours at the dew point was highly significant. The correlation with rainfall was not significant. It seems probable that a correlation with the average relative humidity would also be found, but this has not been calculated.

DISCUSSION

The maximum rust mite infestation occurs some weeks after the beginning of the rainy season. This is in marked contrast to the purple mite population, which reaches a maximum during the spring dry period, and declines rapidly soon after the beginning of the rainy season (4,5).

Rust mite populations begin to increase at about the time of the beginning of the rainy season, which is accompanied by an increase in the number of hours at the dew point. In the winter, an increasing trend

in rust mite populations, and not dry weather as suggested by Watson and Berger (7). It has been noted, however, that the most rapid increase occurs when an increase in moisture follows a prolonged dry period.

In 1957, the rust mite population started increasing in mid-April, as a result of moist conditions accompanying the frequent rains that occurred this spring. In the previous six years, there was considerable dry weather in April and May and the

Table 2

Correlations between Rust Mite on Leaves and Moisture		
Comparison	Correlation Coefficient	Significance*
Activity/Hours at Dew Point	.758	1%
% Leaves Infested/Hours at Dew Point	.200	1%
Activity/Inches of Rain	.042	n.s.
% Leaves Infested/Inches of Rain	-.065	n.s.

*n = 311, required for significance at the 5% level, .113
required for significance at the 1% level, .148

Florida Grapefruit Trees

There were four orange trees in Florida for each grapefruit tree, as of December 1956. The 7,402,526 grapefruit trees reported by the State Plant Board, Gainesville, were more concentrated in the top 10 counties than orange trees. The top 10 counties had 80 percent of the orange trees. Whereas, the top 10 counties in grapefruit trees had 88 percent of all grapefruit trees. Seven counties of these two groups were the same and were Polk, Lake, Saint Lucie, Orange, Highlands, Hillsborough and Pasco. However, these counties were not in the same order in the two kinds of citrus. See Tables 1 and 2. Highlands County ranked seventh in each case and was the only county with identical ranking in each group.

Polk ranked number one in grapefruit trees and had 26 percent of the trees in Florida with 1,934,130 trees. Lake and Saint Lucie ranked second and third, but the sum of both amounted to fewer trees than were in Polk. Indian River was fourth and Pinellas fifth. These five counties had 69 percent of all grapefruit trees. Three counties of the Indian River section, Saint Lucie, Indian River and Brevard had 25 percent of all trees of the State.

Seedy and Seedless Trees

Thirty-three percent of all trees were seedy varieties, 62 percent seedless and 5 percent not identified. The proportions of each varied materially in different counties. Orange, Brevard, Pasco, Seminole, Marion, Palm Beach, Saint Lucie and Indian River were largely seedless, while Polk, Manatee, DeSoto, Hardee, Lee, Hernando and Putnam were more than 50 percent seedy. The seven counties named as having high proportions of seedy varieties had 53 percent of all seedy trees and eight counties with high proportions of seedless varieties had 47 percent of all seedless trees. The top 10 counties in seedy trees were Polk, Lake, Pinellas, Highlands, Manatee, Hillsborough, Orange, Pasco, DeSoto and Indian River. These counties had 86 percent of all seedy trees. The top 10 counties in seedless trees were Polk, Saint Lucie, Indian River, Brevard, Pinellas, Orange, Hillsborough, Highlands and Pasco. These counties had 90 percent of all seedless trees.

... By ...



ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRICULTURAL EXPERIMENT
STATION

Red and Pink Trees

Thirty-one percent of all trees were red and pink. This includes both seedy and seedless reds and pinks. For a number of seasons

a high proportion of the grapefruit nursery stock movement has been reds and pinks which means that the majority of such trees now in groves are of young ages. The grapefruit nursery stock movement for the five seasons of 1950-55 were 77 percent reds and pinks and 50 percent in 1956-57.

There were seven counties with more than half their grapefruit trees of red and pink varieties as of December 1956. These counties were Martin, Sumter, Charlotte, Okeechobee, Saint Lucie, Broward and Seminole and ranged from 72 to 52 percent reds and pinks. Some of these counties had very few grapefruit trees in total, but the seven counties had 14 percent of all grapefruit trees within the State. Other counties with more than 25 percent of the grapefruit trees of red and pink varieties were Lake, Indian River, Orange, Brevard, Hillsborough, Pasco, Hardee, Osceola, Marion, Hernando, Palm Beach, Citrus and Collier.

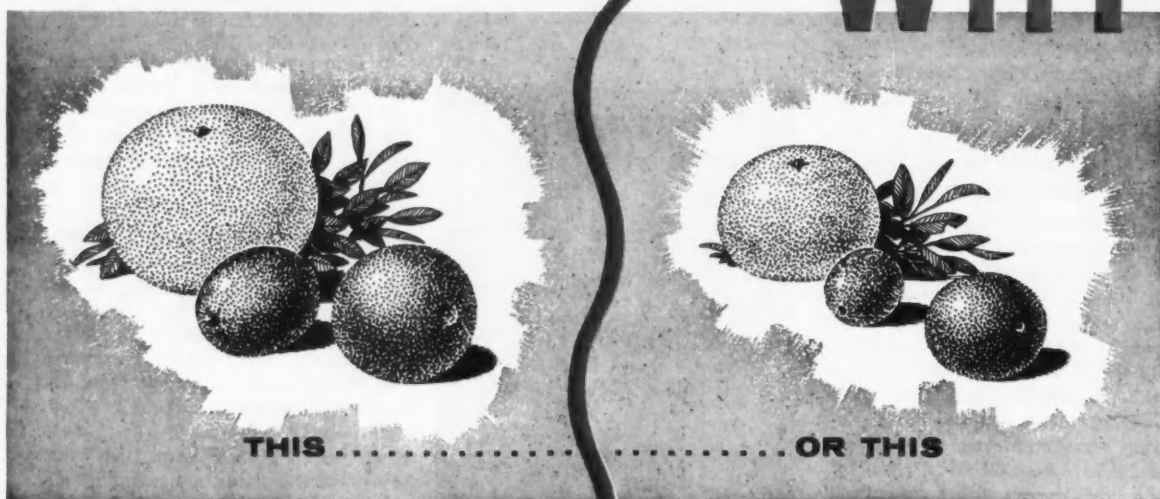
Lake led all counties in red and pink trees with 509,275 which was 22 percent of such trees within Florida. Other counties of the top 10 were Saint Lucie, Indian River, Polk, Orange, Brevard, Pasco, Pinellas, Hillsborough and Seminole. These 10 counties had 89 percent of

(Continued on Page 16)

Table 1. Grapefruit Trees by County as of December 1956

County	Total Trees	Percent Seedy	Percent Seedless	Percent Unidentified	Percent Red and Pink Seedy and Seedless
Polk	1,934,130	53.3	43.2	3.5	13.5
Lake	1,106,387	21.8	69.9	8.3	46.0
Saint Lucie	813,054	5.3	93.4	1.3	56.1
Indian River	756,763	6.6	90.6	2.8	35.8
Pinellas	495,148	37.2	44.4	18.4	14.4
Orange	321,822	31.7	68.1	.2	44.7
Highlands	311,986	47.7	43.3	9.0	10.1
Brevard	305,171	15.4	83.4	1.2	49.0
Hillsborough	252,040	45.0	54.8	.2	26.6
Pasco	203,990	31.9	65.6	2.5	38.6
Manatee	186,683	65.6	33.5	.9	19.6
DeSoto	100,250	53.0	47.0	0.	16.1
Seminole	82,882	30.4	69.5	.1	52.1
Hardee	74,564	52.0	47.9	.1	42.8
Volusia	67,002	44.0	56.0	0.	21.6
Osceola	56,278	41.6	58.4	0.	32.5
Marion	55,721	27.0	69.4	3.6	42.7
Broward	45,612	27.9	43.4	28.7	54.5
Lee	44,703	68.3	30.8	.9	17.9
Hernando	35,864	55.5	44.4	.1	32.7
Sarasota	34,956	47.5	52.5	0.	15.4
Dade	30,632	38.1	38.1	23.1	8.8
Palm Beach	24,698	5.0	94.9	.1	42.8
Putnam	17,314	57.3	24.5	18.2	11.0
Martin	10,141	13.8	86.2	0.	72.1
Charlotte	8,787	44.7	55.3	0.	58.8
Citrus	7,982	38.8	61.2	0.	36.3
Hendry	7,009	86.6	13.4	0.	18.4
Sumter	5,346	30.5	67.5	2.0	70.2
Okeechobee	2,258	30.3	69.7	0.	56.9
Alachua	1,646	46.6	35.4	18.0	18.2
Saint Johns	1,423	57.0	19.5	23.5	9.6
Collier	503	37.4	62.6	0.	40.6
Duval	202	32.7	40.6	26.7	0.
Flagler	79	0.	100.0	0.	0.
Total	7,402,526	33.1	62.2	4.7	31.2

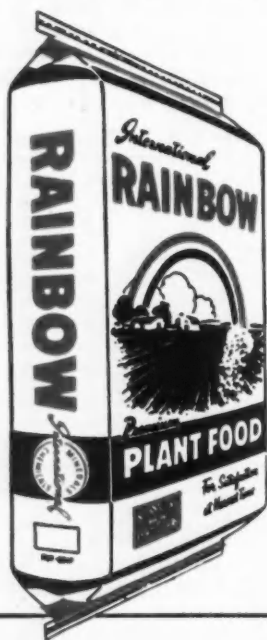
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- Stronger stems so your fruit stays on trees longer.
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Committee Urges Research To Reduce Hazard of Freeze Damage

Studies aimed at producing cold-hardy citrus rootstocks and varieties, developing methods of inducing dormancy, evolving treatments to effect recovery from freezing, and making good economic use of injured fruit were urged by the U. S. Department of Agriculture's Citrus and Subtropical Fruit Research and Marketing Advisory Committee at its annual meeting in Washington.

All major citrus-producing areas face the hazard of frost damage, the committee pointed out, and are equally in need of research to help reduce it.

The committee also advised expanded research to market citrus products more efficiently. High on their priority list of needed marketing work is a proposal to give greater emphasis to study of storage and market diseases of citrus fruits, avocados and mangos. Special attention should be given to the use of antibiotics, radiation treatments, and treatments with volatile materials, the committee said.

Strengthened investigations on improved methods and equipment for handling and packing fruit and on postharvest physiology of fresh citrus fruits, avocados, and mangos are also important marketing research needs, according to the committee.

In the area of utilization research the committee urged more basic studies on the chemical composition of citrus and subtropical fruits and their products as a basis for new processes for making citrus products, improved methods of determining quality and purity, and new industrial and pharmaceutical uses.

Other utilization research called for by the committee includes expanded research on objective measurements of processing and product quality and on the time-temperature tolerance of frozen citrus products.

Other research cited as meriting high-priority attention includes:

Home Economics—New research on the consumption of foods and on nutrient content of diets of individuals of different age and activity groups.

Production—An enlarged research program on citrus rootstock and breeding. Expanded research on cold-hardiness and methods of in-

ducing it. New research to develop and improve equipment and methods for harvesting and farm handling of citrus crops.

USDA Domestic Marketing Services—Expanded work on the development and revision of grade standards for processed fruits and vegetables by a new emphasis on citrus and fruit products.

Marketing Service by State Departments of Agriculture—Strengthened programs aimed at collecting and disseminating data needed in making market decisions at development of objective production forecasting.

Established under the Research and Marketing Act of 1946, the committee is composed of leaders from the citrus and subtropical fruit industry. Its detailed recommendations for research to be undertaken by USDA will be submitted formally to the Department within the next few weeks. Copies will be available from the committee's executive secretary, Dr. Roy Magruder, Office of the Administrator, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D. C.

Marvin H. Walker, general manager, Florida Citrus Cannery Cooperative, Lake Wales, Fla., was elected committee chairman, succeeding L. S. Hamme, manager, Texsun Citrus Exchange, Weslaco, Tex. A. L. Chandler, manager, field service department, Pure Gold, Inc., Redlands, Calif., was reelected vice-chairman.

Other committee members who attended were: Stanley B. Crockett, Harlingen, Tex.; Willard M. Fifield, provost for agriculture, University of Florida, Gainesville, Fla.; John T. Lesley, general manager, Florida Citrus Exchange, Tampa, Fla.; T. A. Lombard, president, Rancho Sespe, Fillmore, Calif.; and P. S. Twombly, general manager, Golden Citrus Juices, Inc., Fullerton, Calif.

Country living today is better than ever before, says the U. S. Department of Agriculture.

Most farm families have the same kinds of conveniences city families enjoy, and many city families are moving to the country so they can enjoy some of the advantages the country holds over the crowded city street.

What's In Grapefruit?

When we eat (or drink) grapefruit,—What do we get?

For one thing, we get one of the finest foods in the whole world. For another, we get a delightful experience, due to the fine, subtle flavours of the fruit. And, of course, we get health.

Now, too much emphasis has been placed, I think, on the "medicinal" value of citrus fruits. Healthy, normal people don't want to take medicines, not if they can help it. So let's put the vitamins in the background for a moment (heaven knows there are almost unlimited vitamins in grapefruit, especially C!) and recognize the grapefruit for what it is—something very good to eat.

Some one wrote a book, "You Are What You Eat55. If you eat lots of grapefruit you won't be ashamed of yourself. For this fruit is one of the grandest gifts which the good Lord ever gave to man to enjoy.

Foods do many things, but among the results of eating meats, vegetables, fruits . . . well, the human being "alkalizes" or "acidifies" his system. The grapefruit is perhaps the finest alkalizer on the face of the earth.

You have heard folks say, perhaps, that "I just can't eat grapefruit—they are too acid!" How little they know!! Because the grapefruit is "acid" when you eat it, but after digestion, is an amazingly powerful "alkalizin" of the body. Eat something that is NOT "acid" to start with, and in almost every case the final result is acidity.

Some fruits do not alkalize the system (something the human seems to need constantly)—prunes for instance. Sweet prunes have a substantially acid reaction, after digestion, as do all of the prunes, and some other fruits.

The fruit sugars in grapefruit are wonderfully fine for people, giving quick energy without the bad after effects. Again some one has written a book, "Refined Sugars Are the Curse of Civilization". But the natural sugars so plentiful in grapefruit, are not a curse, but a blessing.

Personally I think it is an unforgivable sin to put sugar on grapefruit, ever. Grapefruit never needs sweetening (if ripe), and why cancel out all the benefits?

... By ...



HERB MOSHER

Like almost every one in the good old USA these days, I figured recently in an automobile accident. I broke eight ribs which is quite a lot of the "framework" to crack up, that way. But it happens to us all, as stated, and those who have not been in such a mishap can figure that they soon will be, except for very good luck, indeed.

Anyhow, I probably would have died, or at least would have had a far worse time of it in recovering, except for the grapefruit in my diet both before and after the accident. Due to the heavy calcium content of the grapefruit I had been "living on" since memory runneth not to the contrary, my ribs held up remarkably well under heavy shock. Then, as the doctors and the X-rays both pointed out, during the weeks after the accident, the knitting of the busted bones was "remarkable", taking place "very rapidly". Without calcium in the system, how can bones knit together again?

Grapefruit is a very fine source of available calcium. The scientists can prove it any time (note the attached chemical analysis from the University of Alabama), but our first-hand experiences should not be discounted, either. One thing I have done during the last 20 some years has been to "raise" up two daughters alone, with some help of course at times, especially when the girls were very young.

I like to tell about the wonderful teeth that these youngsters always have had (and still have, now that they have just reached voting age). One of my daughters had only one very tiny "cavity" up to the time she was 21 years of age. The other

girl had no cavities at all until she too figured in an automobile accident (see what I mean—every body gets into a wreck now-a-days) and lost four teeth that way. I give the credit for this remarkable dental performance to Indian River grapefruit and many a dentist whom I have consulted agrees with me in so far as you can ever get a doctor of any type to make a really positive statement.

The lands in the Indian River country are often underlaid with oyster-shell subsoils which, so far as any one can determine, results in an especially high yield of "available calcium" in the citrus fruits grown thereon. Of course, most of Florida's soils are rich in calcium, so I am not saying that it takes Indian River fruit only to build strong teeth. It is just that my daughters ate an average of two or three such Indian River grapefruit every day (average) for most of their lives to date. Many a dentist friend of mine (and for some reason I have many friends who are dentists) has taken real pride in pointing to my daughters' perfect teeth as being "what the healthy human should possess." This has given me much satisfaction and real happiness.

While quail hunting in Georgia not so long since I met a "tomato king" who grows and ships a substantial part of the Georgia Spring tomato crop. This gentleman told us a rather amazing story, but while you cannot produce scientific evidence or statistics to prove it 100%, still, why not accept a sincere report from an intelligent man for what it is worth? He told about how he'd "stomach trouble" for years. Serious, too, and very annoying. Eating his own tomatoes didn't help, and nothing else did, either. He went from doctor to doctor (having lots of money), but it did no good. He ate and swallowed enough medicine, so he assured us in the dining room of the Glennwanis Hotel, in Glennville, Ga., "to stock a dozen drug stores." The condition (his poor stomach) got wores and worse.

Then one day in Miami beach (this is how he tells it) . . . "I met a doctor who said he could cure me easily with grapefruit."

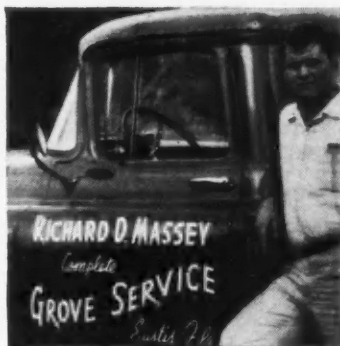
"All you have to do," this physician (Continued on Page 16)

Economy plus air penetration sold Florida Grove Service operator an OLIVER Model 500 Spra-Blast



"I operate a complete grove management service. That's why I have to be sure of complete coverage and low costs. And I've found the ideal combination—the diesel-powered Model 500 Oliver Spra-Blast pulled by a diesel Super 77. Both units combined consume only 24 to 25 gallons of low-cost diesel fuel per day while putting on 45 tanks of material. The engine and fan are quieter and cost less to keep up, and at the same time give me excellent air penetration of all sizes of trees." Says:

Richard D. Massey
Eustis, Florida



This report is typical of the comments coming in from users of the Oliver Model 500 Spra-Blast. Where economy and complete coverage are important, orchard and grove operators are turning to Oliver.

Only Oliver offers diesel power at a cost comparable with most gasoline-powered sprayers. Gasoline models are also available—choose

whichever saves you most. Both operate at 1850 rpm. for quiet, dependable service and low upkeep costs.

Oliver extra advantages at no extra cost include: 38-inch true airfoil design fan, choice of Marlow centrifugal or Iron Age piston-type pump, ultra-vision instrument panel, specially treated tank to resist corrosion, hydraulic hitch jack.

For bigger profits in 1958, arrange to try—arrange to buy a new Model 500 Oliver Spra-Blast. The Oliver Corporation, 400 West Madison Street, Chicago 6, Illinois.

OLIVER
"FINEST IN FARM MACHINERY"

Also Manufacturer of the Famous Oliver Outboard Motors

WHAT'S IN GRAPEFRUIT

(Continued from Page 14)

cian declared, "is to eat six grapefruit each day, with your meals. But eat them AFTER your meals. Try to eat three grapefruit AFTER each breakfast for a time. Then, reduce the number to one or two after breakfast, if you wish, but eat the fruit after every other meal to make six grapefruit daily." This was a "high society" doctor, too, and the bill for the advice was substantial—but it worked!

The "tomato king" swore that, over a period of ten years, he'd had no further trouble with his stomach—except on a couple of occasions when he ran out of grapefruit. The trouble quickly reappeared when he was without the magical benefits which Florida's grapefruit brought to him, but after this had occurred a few times he made sure that it could never happen again. His car is "ballasted down" with grapefruit when ever he is in Georgia, on the "tomato deal", and he never gets far enough away from a source of supply to get into difficulties with that 'tummy anw more!

Grapefruit do have enzymes and strange chemical properties, till now not completely understood or explained, which help digestion in people, just as papayas and pineapples do. Any one of experience knows that after a heavy dinner if you'll eat a slice of ripe fresh pineapple, the "heaviness" of the dinner quickly vanishes. The papaya is now recognized as an especially good fruit for this same purpose. It is the same with the grapefruit. "Proof of the pudding is in the eating" wrote Cervantes, and while my doctor friends admit "there is something to this", it is not necessary to have "complete scientific proof" in order to benefit from such discoveries.

Why did I go to the University of Alabama to have grapefruit analyzed by expert chemist. That's easy. It is true that the University of Florida chemist would have reached the same result . . . BUT people would say "NUTS! Of Course the Florida professors will find the Florida grapefruit beneficial!"

The Alabama scientists, however, bent over backwards to give the Florida fruit the most strenuous going-over imaginable. Besides the good results of the chemical analysis, the Alabama profs. stated, numerous times, that "This grapefruit sure tastes good!"

So while the experiments continue in line with finding out just exactly what's "in grapefruit", this preliminary report is passed along for what it is worth, and space does not permit any more data at this time or rather I should say, in this particular article.

Here before me as I write the Florida Citrus Commission's valuable scientific publication, "Vitamin, Mineral, and Proximate Composition of Frozen Fruits, Jucies, and Vegetables", plus much other beautifully printed material from the commission, covering citrus fresh, frozen and canned. It cost a lot of money to carry on this work. All this good material will be analyzed and presented in another article to follow which will be entitled, "What's in Oranges?"

But for the present we are dealing with grapefruit, one of the greatest blessings which the good Lord has given to man.

I would suggest, as a first move, that ALL of the citrus shippers in Florida make unlimited amounts of grapefruit juice available to their employees, in offices, packinghouses, groves and to themselves.

Dear Mr. Mosher:

Indian River Grapefruit analysis

for calcium content:—

Indian River Grapefruit, calcium content

Strained fresh juice 16 mg per 100 g of juice

Filtered juice, 17.5 mg per 100 g of juice.

Literature gives the following for canned grapefruit juice.

8 mg per 100 g of juice

Calicum content of milk 118 mg per 100 gr.

Calcium content of blood 10 mg per 100 gr.

Christmas holidays interrupted our analysis of grapefruit from the stores. Should you be interested in a comparison between fruit obtained in stores and Indian River Grapefruit we shall be happy to supply you with this information.

The analysis was made by Mr. Ralph Ed Newsome (Registered Medical Technologist) Druid City Hospital, Tuscaloosa, Ala. He has been running calcium for some time and his work is very precise and reliable.

Sincerely

George M. Toffel

Associate Professor of Chemistry

FLORIDA GRAPEFRUIT TREES

(Continued from Page 11)

the trees of these varieties. The

three Indian River Section counties of Saint Lucie, Indian River and Brevard had 38 percent of all reds and pinks.

Table 2. Rank of County by Kind of Grapefruit

County	Total Trees	All Seedy	All Seed-Less	Red & Pink Seedy & Seedless	Seedy Bearing	Seedy Non Bearing	Seedy White Bearing	Seedy White Non Bearing	Seedless Bearing	Seedless Non Bearing	Seedless White Bearing & Non Bearing
Polk	1	1	1	4	1	1	1	1	4	1	4
Lake	12	12	12	1	12	12	12	12	3	3	4
Saint Lucie	3	12	3	12	12	13	12	12	3	1	3
Indian River	4	10	4	3	10	16	10	4	2	2	3
Pinellas	5	3	6	8	3	5	3	6	8	5	3
Orange	6	7	7	5	7	12	7	7	5	10	3
Highlands	7	4	9	13	4	6	4	9	10	6	6
Brevard	8	11	5	6	11	7	11	5	8	11	9
Hillsborough	9	6	8	9	6	4	6	8	10	7	10
Pasco	10	8	10	7	8	8	8	10	7	10	12
Manatee	11	5	11	11	5	2	5	11	13	12	11
DeSoto	12	9	13	17	9	21	9	13	14	11	14
Seminole	13	16	12	10	16	19	17	12	9	14	21
Hardee	14	13	16	12	13	11	13	17	12	21	13
Volusia	15	15	15	18	15	15	14	15	15	13	17
Osceola	16	17	17	16	17	23	16	16	18	17	16
Marion	17	20	14	15	20	29	19	14	17	16	23
Broward	18	21	19	14	21	14	24	19	22	23	20
Lee	19	14	22	22	14	17	15	22	20	20	22
Hernando	20	18	21	19	18	28	18	21	27	22	15
Sarasota	21	19	20	23	19	20	20	20	26	19	23
Dade	22	22	23	27	22	26	21	23	25	18	24
Palm Beach	23	29	18	20	23	27	29	18	27	23	24
Putnam	24	23	27	28	24	25	27	24	24	26	27
Martin	25	28	24	21	25	27	27	24	25	22	27
Charlotte	26	25	26	24	25	24	26	25	22	27	25
Citrus	27	26	25	26	26	10	25	26	29	25	28
Hendry	28	24	30	29	24	9	23	30	31	28	29
Sumter	29	27	28	25	27	22	28	28	19	33	30
Okeechobee	30	31	29	30	32	—	31	29	—	29	31
Alachua	31	32	31	31	31	32	32	31	30	30	31
Saint Johns	32	30	33	32	30	30	30	32	33	31	32
Collier	33	32	32	32	32	31	33	33	28	32	34
Duval	34	34	34	—	34	—	34	35	32	34	35
Flagler	35	—	35	—	—	—	—	—	—	—	—

New!

**Special for use
on Florida citrus**

Du Pont

PARZATE® C

ZINEB FUNGICIDE



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7
ways
you
profit



with **Du Pont**
PARZATE® C

- 1. BRIGHT CLEAN FRUIT—**
free of russetting
- 2. CONTROL OF RUST MITES—**
long residual action
- 3. CONTROL OF "GREASY SPOT"—**
prevent leaf drop
- 4. NO HARMFUL EFFECT ON SOIL pH—**
"Parzate" is neutral in action
- 5. REDUCE SPRAYING COSTS—**
Experimental data and grove tests
show that "Parzate" C may be mixed
with oil and parathion.
- 6. REDUCE EQUIPMENT WEAR—**
less material for pumps and nozzles
- 7. INCREASE GROVE VIGOR—**
disease-free foliage means better
new growth and higher yields



PARZATE® C

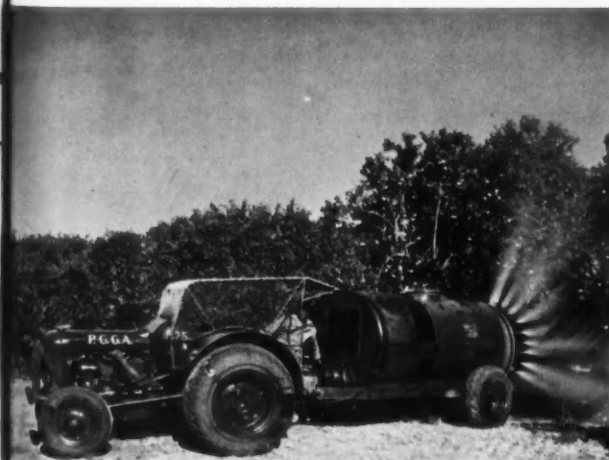
ZINEB FUNGICIDE



This bright clean fruit resulted from using Du Pont
"Parzate" C.

DU PONT PARZATE® C

developed especially for use on Florida
citrus, controls both fruit russetting and
greasy spot on oranges and grapefruit.



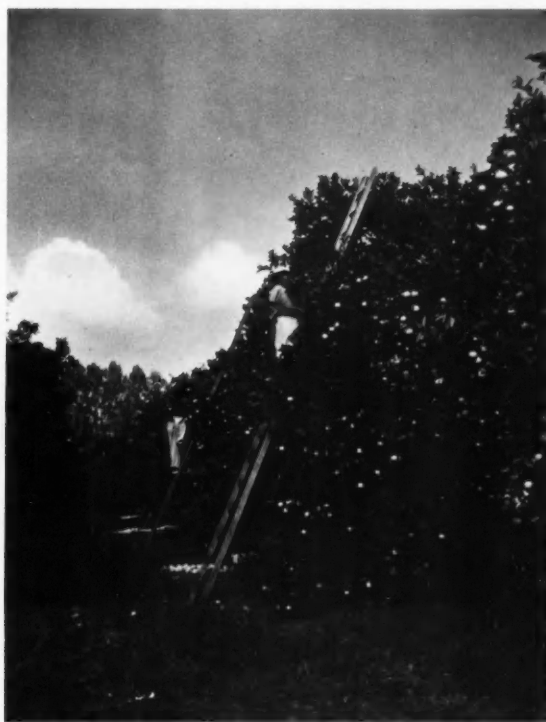
of equipment used to spray "Parzate" C in Florida groves.
"Parzate" C is a wettable powder, compatible with spray oils and
parathion.

Bright
when
Du P



Note russeted peel on this untreated fruit.

E[®] C zineb fungicide



Bright, clean fruit and healthy foliage are the payoff when fruit russetting and greasy spot are controlled with Du Pont "Parzate" C.

SPECIAL NOTE

FRUIT RUSSET CONTROL

Use "Parzate" C at the rate of one pound per 100 gallons of water. Begin spraying when 10% of the leaves are infested with rust mites. The best time to apply "Parzate" C is in the post-bloom period and in the summer application for scale insect control—(June or July).

REDUCE "PARZATE" C to ½ lb. for rust mite control except when a copper compound is included in the spray.



GREASY SPOT CONTROL

Use "Parzate" C at the rate of one pound per 100 gallons of water. Make two applications at 4 to 8 week intervals during July and August.

If only one application can be made for greasy spot, double the above dosage and make the application in July. Best results are to be expected with the split schedule.

All applications should thoroughly cover foliage and fruit for best results.

MIXING THE SPRAY

"Parzate" C is a wettable powder which mixes readily in water. Start filling the tank with water. Sift in the required amount of "Parzate" C when the agitator paddles are covered or the jet or recirculating pipe from the pump is covered. Fill the tank with water when the "Parzate" C is thoroughly mixed.

COMBINATION SPRAYS WITH OIL AND PARATHION

"Parzate" C is compatible with spray oils and parathion, separately or in combination. The product has been especially formulated to prevent difficulties which sometimes arise in mixing operations due to wide variations in types of oils and spray waters.

Proceed with addition of "Parzate" C as indicated above; then add the parathion. When the tank is half full, add the oil. Allow the mixture to become thoroughly emulsified; then add the remainder of the water. Continue agitation until tank has been sprayed out.

Final mixture should be a smooth, creamy emulsion with no free oil streaks floating on the surface.



Get the best . . . buy Du Pont "Parzate" C in the yellow and black bag! Conveniently packaged in 5 and 50 lb. bags.



Note the bright fruit ready to pick on this tree that was sprayed with "Parzate" C.

You'll pick quality fruit like this when citrus is protected with "Parzate" C.



On all chemicals, follow label instructions and warnings carefully.

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All Industry Committee Appointed By Chm. Scales

A 17-man all-industry anchor committee on fruit quality—potentially one of the most important and far-reaching in the history of the citrus industry—has been appointed by the Chairman of the Florida Citrus Commission.

Key Scales, Jr., of Weirsdale, named A. V. Saurman of Clearwater to head a Special Industry Committee on Fruit Quality whose job will be to "investigate the entire field of fruit quality as it relates to all uses and to make recommendations to the Commission for action or possibly for submission to the Legislature."

Saurman indicated initial studies would revolve around policy, a review of present maturity standards, relationship of maturity to quality on consumer acceptance and satisfaction, relationship of maturity to finished product grades, and possible changes in maturity requirements.

"If maturity alone is involved, it will be relatively simple to study (by the anchor committee alone), but if raw fruit quality above legal maturity seems acceptable, then we would need several sub-committees," Saurman said.

Commission Chairman Scales, in making the announcement, said it was his purpose "to make this committee as representative as possible

of all the principal phases of our industry operations—growing, harvesting, shipping, canning and concentrating." Recommendations from this committee, he added, "could well result in some of the most fundamental and far-reaching actions by the industry in many years."

In addition to Saurman, others named include: Marvin H. Walker, Florida Citrus Canners Cooperative, Lake Wales; Bruce W. Skinner, H. P. Hood and Son, Dunedin; J. R. Graves, Graves Brothers Company, Wabasso; Edgar Beeland, Clearwater Growers Association, Clearwater; Albin P. Crutchfield, Vaughn-Griffin Packing Company, Howey-in-the-Hills; John T. Lesley, Florida Citrus Exchange, Tampa; Robert C. Wooten, Pasco Packing Company, Dade City; E. E. (Bill) Cook, B. C. Cook and Sons, Inc., Haines City; Holman R. Cloud and Dr. Wallace Roy, Minute Maid Corporation, Orlando.

John A. Snively, Jr., Snively Groves, Inc., Winter Haven; R. V. Phillips, Haines City Citrus Growers Association, Haines City; L. L. Recker, Adams Packing Company, Auburndale; Vernon L. Conner, Florida Citrus Mutual, Mount Dora; James Herlong, A. S. Herlong and Company, Leesburg; and Ben Hill Griffin, Ben Hill Griffin, Inc., Avon Park.

Plant Board Begins Nursery Regulations Against Nematodes

Gainesville, Fla.—Florida nurseries producing trees for commercial citrus groves must be certified free of the burrowing nematode beginning February 1, according to Dr. W. G. Cowperthwaite, plant commissioner for the State Plant Board.

Regulations to this effect were adopted by the Board September 19, 1957, in an effort to prevent further inroads of the spreading decline disease.

Dr. Cowperthwaite says Board representatives will inspect and approve established nurseries found to be free of the burrowing nematode.

Nurserymen wishing to set up new operations for the production of commercial citrus trees after February 1 must obtain site approval be-

fore the nursery is established.

"Under these regulations, growers can demand and obtain planting stock certified free of the burrowing nematode and thus protect their groves from the pest which causes spreading decline," says the plant commissioner.

For new nurseries, the Board's inspectors will favor virgin land where certain domesticated perennials have never been grown. Nurseries must be at least 200 feet from dooryards and established domesticated plants, unless the nematode has been found in the domestic plants, when the minimum distance is 400 feet.

There is no minimum distance from healthy citrus groves at least

15 years old, or young groves set with certified plants. Mango, lychee and macadamia trees are not hosts of the burrowing nematode.

Infested and suspicious areas, properly fumigated under the supervision of an inspector and left fallow for six months, may receive site approval if they are the required distances from domesticated or infested plants.

Plants from nurseries on unapproved sites, or on sites which later become disqualified, must be hot-water treated before moving from the nursery.

"Site selection no doubt will handicap backyard nurseries in residential areas," says Dr. Cowperthwaite, "but we are trying to protect an industry valued at more than a billion dollars."

Relations Between Moisture Conditions And Rust Mite Infestations

(Continued from Page Ten)

disease in which *Hirsutella Thompsonii* Fisher is involved.

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What The Freeze Will Mean To The Future of The Citrus Industry

Predominant in the minds of the majority of Florida citrus growers at the present time is the question as to just how greatly the recent freezes in Florida have affected their particular crops and trees. Of almost as much importance to them looms the question as to what the future holds in store for them in the conduct of their citrus operations.

During the past two weeks a representative of The Citrus Industry has talked to large numbers of growers, shippers, packers, juice and concentrate processors, as well as nurserymen and fertilizer company officials with the result that through a wide diversity of opinion, influenced by the affect of the freeze upon individual operators, there is a general industry-wide consensus of opinion that for those growers whose crop and tree damage did not result in serious loss, the future of the citrus industry looks brighter today than it has for a long time.

Total Returns For Season

In spite of the admitted serious damage to the present season's crop those who should know, predict without hesitation that the industry-wide return from this season's crop will be as great or greater than would have been the case had the freeze never occurred.

Much of this return, it is stated, will come as the result of the big volume of fruit which will be processed in single strength juice and in the form of frozen concentrates. In this processing program much of the fruit which was not available for fresh fruit shipment, it has been demonstrated can be used in producing citrus juice without detracting from its flavor or quality.

The steps taken by various state agencies to prevent the shipment of inferior fruit or damaged an unpalatable juice has served the admirable purpose of preventing damage to the reputation of Florida's citrus crop.

The result, it is predicted, will be the return to the state of as much money for citrus products as would have been the case had the normal procedure of sales not been interrupted by the ravages of the freeze.

This news, of course, offers no

consolation to the grower who lost the major portion of his crop, or a sizeable segment of his trees during the recent cold spells, but it is an encouraging situation for the industry as a whole.

Not too long ago statistical reports indicated that the per capita consumption of citrus fruit had diminished by 10 percent in the past ten years. Of course, the increase in population of the nation over

the same period still enabled Florida citrus growers to sell their crops, but the large volume production plus the decreased per capita consumption had a depressing effect upon prices, which unlike the freeze affected all growers pretty much alike.

This season's crop estimate early in the season was placed at around 100 million boxes for oranges. Some persons who should know asserted that had there been no freeze the

SOME NEW FACTS YOU SHOULD KNOW ABOUT LOW-COST AMMONIUM NITRATE AND SUBSOIL pH

Not only is there strong research proof that ammonium nitrate is best for citrus production, but there is also important new research proof that the source of nitrogen has no effect on sub-soil acidity.

From Preliminary Report on the Effect of Nitrogen Source and Rate and Lime Level on pH, Root Growth, and Soil Constituents in a Marsh Grapefruit Grove. By Paul F. Smith and Walter Ruether. U.S.D.A. Horticultural Field Station, Orlando, Florida.

(This is a continuing test using Calcium Nitrate, Ammonium Nitrate and Ammonium Sulphate. Two levels of lime were maintained.)

(Occasional editing and bold-face characters are ours. Complete report furnished on request.)

"If yield, tree growth, and fruit quality remain relatively unaffected, as they have during the first three years of this test, the source of nitrogen cannot be considered as a primary factor in citrus production on Florida acid soils.

"There is . . . no evidence here to support the postulation . . . that a substantial part of subsoil acidity in light Florida soils is attributable to the leaching of ammonia to the subsoil where nitrification stops but where direct ammonia absorption produces acidity."

Yes, proper liming. No evidence to support the older theory that subsoil acidity can be caused by nitrogen sources.

Add to this the important results of a recent ten-year test: "Mixtures of nitrate and ammoniacal nitrogen would appear preferable as a maintenance nitrogen source where groves are in good physical condition and where sufficient dolomite is used to

maintain the pH between 5.5 and 6.0 at all times."

Lime Is Always Necessary

Lime is necessary all the time, whether you use ammonium nitrate or not. pH alone is not enough. Calcium must be present in your citrus soil, according to Bryan and Ne-smith. They say,

"Repeated records are re-emphasizing the need for ample soil calcium as well as proper pH to maintain the highest fertilizer efficiency."

Use these important facts to cut your fertilizer costs and produce better quality fruit this year—the low-cost Dixie Nitrogen way.

For complete copies of the three reports quoted above, see your County Agent or write us.

Double Barreled, Low-Cost, 33.5% Dixie Nitrogen Contains the Ideal Balance of 1/2 Nitrate and 1/2 Ammoniacal Nitrogen.

Specify safe, dependable, low-cost DIXIE Nitrogen for your grove fertilizers.

Bold face and italicized characters are ours, as is editing.

1. Nitrogen Sources as Related to Yield and Quality of Hamlin Oranges" (A Ten-Year Summary) by John W. Sites, I. Ne-smith, W. Wander and E. J. Deszyk, Florida Citrus Experiment Station, Lake Alfred.
2. Fertilizer and Soil Amendment Studies with Pineapple Oranges on Lakeland Sand. By O. C. Bryan and James A. Progress Report of Short Research Grove 1949-1955. Published by Soil Science Foundation, Lakeland, Florida.



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crop would have come nearer reaching 120 million. Best estimates of crop losses for the season now run from eighteen to twenty-million boxes, with the major portion of this loss being in the fresh fruit shipments.

Five To Ten Years Prospects

Several of those to whom we talked concerning the future of the industry estimated that it would require from five to ten years for the volume of citrus to reach the magnitude of the crop before the freeze.

This figure is based upon the belief that even trees which were least affected would have less fruit on them next year, while many of the surviving trees would require three or four years before they would again come into normal production. New trees which will be planted cannot expect to produce much fruit before they are five years old, while a considerably longer period is required before their production would reach proportions to where they will be in the category with older producing trees.

Contrary to the last recession in citrus prices when many groves were sold at a mere fraction of their normal worth one well-informed source stated that older groves today were worth double the value they had during the pre-freeze era.

Larger Market

Looking to that period 10 years from now one industry man in whose judgement we have the greatest respect stated that when our production of citrus reaches the same volume as it was before the freeze there is every likelihood that the market will be sufficient to consume all of such a crop at prices which should be far better than was the case prior to the freeze.

This belief was based upon the knowledge that the number of potential consumers will be largely increased in another ten years and that the effectiveness of advertising will help increase the per capita consumption of citrus.

In this interval, barring another disastrous season, growers who have citrus fruit to market, will be paid much higher prices for their citrus crops than has been the case the past few years which is the foundation for the belief in some quarters that for the industry as a whole the freeze served a good purpose. Which still leaves the grower who suffered the most severe losses in an unhappy position.

Nursery Stocks

There is going to be an unprecedented demand for good citrus nur-

sery stock during the next few years, and while nursery stock has been relatively scarce among some of the state's most highly reputable nurseries for some time. Many of the nurseries were able to protect their young trees against the freeze and will be able to supply a large demand, the fact remains that all who need trees will be unable to buy their full requirements from their favorite nurseries for two or three years.

The nurseryman today in order to sell his stock must be able to certify his trees as free of nematodes, which has been such a plague in many sections of the state, and the Plant Board has notified nurserymen that by the beginning of 1960 they will be required to guarantee their trees psorosis-free in order to market their stock.

Both these requirements make the nurseryman exercise extreme care in the growing of his stock, but both will assure growers of having as nearly perfect stock as it is possible to grow in the future.

It takes 40 gallons of water to grow feed to produce one egg and 1800 gallons to produce feed for one pound of beer.

Housewives Spending \$4,000,000 A Week On Concentrate

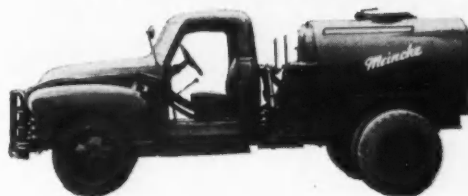
Consumers spend an average of \$4,000,000 a week for frozen orange concentrate but even at the somewhat higher price per can the housewife is now paying, this product is "still a tremendous value," according to Robert W. Rutledge, general manager of Florida Citrus Mutual.

The price at retail must go up still more, too, Rutledge emphasizes, in order to slow down sales so the reduced volume available from Florida's freeze stricken orange crop will last until production from next season's crop can start.

Weekly purchases averaged about 1,150,000 gallons in the usual retail size cans last year, the Mutual official said, and the housewife spent approximately \$200,000,000 for frozen concentrate during the year.

"In the last several weeks since the freeze," he said, "weekly consumer purchases have continued to average more than a million gallons, even though the retail price has been almost three cents per six-ounce can higher than during the same period a year ago."

Now -- NEW HYDRAULICALLY DRIVEN SUPPLY UNIT



- High speed fill and discharge
- One valve operation
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- Lowest maintenance costs
- Machine is seldom in the shop for repairs
- Heavy duty P.T.O. and hydraulic oil pump
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Hoe 4 trees a minute...

with New POUNDS Grove-Hoe

Case 300 Tractor
with Pounds
Grove-Hoe



The new revolutionary Pounds Grove-Hoe tills and fertilizes 4 trees a minute. Owners report

The tilling rotor works the ground thoroughly for good aeration and moisture intake. Rotor can be set to till as shallow as $\frac{1}{2}$ inch near the root crowns . . . as deep as 4 inches away from the tree. Tractor creeper gear permits excellent work—even in Bermuda. Constant PTO allows stationary working of humps of grass, leaving land practically level.

Fertilizer applied ahead of the rotor is thoroughly worked into the soil. Rate of application is $\frac{1}{2}$ to 6 pounds per tree. Automatic control shuts off fertilizer when you raise the hoe for transport. Get full information from the manufacturer or any of the J. I. Case dealers listed below.

Gentlemen:

"I can hoe 1000 to 1200 trees per 10-hour day. Hoed 50,000 trees from September through December '56.

"Busting crust is a big feature—erates soil, leads moisture to roots. Doesn't cut crownroots—shallow at base of tree, $2\frac{1}{2}$ to 4 inches at the tree's water shed.

"I followed a rotary cutter in tall Johnson Grass. Hoe thoroughly chewed up stubble and roots.

"You can just hoe around the tree, leave weeds or cover crop between tree rows to control wind erosion."

R. J. Patrick



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POUNDS MOTOR CO.

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Winter Haven, Florida

POUNDS INDUSTRIAL GAS CO., Winter Garden

POUNDS AGRICULTURAL GAS CO., Winter Haven

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Sold by the following Florida Case dealers:

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Thompson Tractor & Equipment Company

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East Coast Tractor Company

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Riley Pump & Supply Inc.

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Zeiss Motor Company, Inc.

Sebring

or your nearest Case dealer

THIS IS THE HOE THAT HAS MADE HISTORY!!!

Now there is a NEW Hoe and Fertilizer Distributor!

This NEW HOE is 5 feet in length, tapered, designed especially for low-hanging Temple orange trees, and will work equally well on others.

The NEW Fertilizer Distributor is designed to distribute from 1 to 12 lbs. of fertilizer per tree.

The New Hoe and Fertilizer Distributor combination attached to the new Case 350 Tractor is a revelation.

Call Now For A Free Demonstration --- No Obligation!!

Florida's Fresh Fruit Standards Show Promise

... BY ...

HAROLD T. COOK

Florida's citrus growers and shippers know at first hand the value of quality improvement research. The addition of tangelos to the Florida Citrus Code in 1955 completed another chapter in the progress of that State's citrus standards.

The tangelo is a relatively new citrus fruit developed by USDA plant breeders several years ago by crossing the tangerine with the grapefruit. The fruit has recently gained popularity in Florida and shows promise throughout the country.

The 1949 Florida Citrus Code and the maturity research that made much of it possible is a story that centers around the work of Dr. Paul L. Harding and his coworkers at the Orlando field station. The research at Orlando and Miami is a part of the research program of the Agricultural Marketing Service, USDA. Other agencies assisting in the research include the Florida Citrus Commission and the Florida Citrus Experiment Station. Full cooperation was given by the Fruit and Vegetable Division, AMS.

When Dr. Harding and his staff began their work at Orlando in 1935, the Florida citrus industry faced many serious problems. Quality of the fruit shipped from the State varied widely; marketing was sporadic and disorderly; prices were low and unstable, and consumer confidence in the products lacking.

Dr. Harding believed the industry's problem centered around quality standards and consumer confidence in Florida citrus products.

With this in mind, scientists at Orlando began studying the seasonal changes in Florida oranges, grapefruit, tangerines, and Temple oranges. Later on, limes, avocados, and mangos were added to the list. The goal was to correlate taste with fundamental chemical and physical properties of the fruit.

The underlying theory was that consumer approval is based on taste. Dr. Harding believed the industry placed too much emphasis on the attractive appearance of the fruit

and not enough on its palatability.

Unlike most noncitrus fruits, such as apples, peaches, and pears, citrus fruits do not ripen after removal from the tree. Once a citrus fruit is picked, nothing can be done to improve its flavor.

The immediate goal of the researchers then was to find out in a scientific way when a citrus fruit was fit to eat. They realized that the data would have to include all varieties grown in the State, and their edibility at any week or month during the marketing season. It would also have to take into consideration the various types of rootstock.

But before they could correlate taste with chemical properties, the researchers had to find out what consumers wanted in their citrus products.


It was an ambitious project, and a lot of tasters were needed to aid in the research. Dr. Harding recruited tasters from his own staff and from personnel of the Bureau of Entomology located next door. They numbered about 45 in all, and most of them soon became expert citrus tasters. Consumers from outside were also pressed into service, including high school chemistry students.

A simple numerical judging system was devised to indicate whether the fruit was excellent, good, fair, or unacceptable. A value of 70 was designated as minimum acceptance.

Sample fruit was obtained from more than 40 groves scattered throughout the State's citrus belt. The sampling started in September and continued through May for about four years. Wedges of sample fruit were placed in separate piles on long tables. Tasters had no way of knowing one variety from another. They were told not to make gestures while sampling the slices so as not to influence fellow tasters.

And while the tasting was going on, the scientists were making chemical tests on the same samples. It wasn't long before some basic conclusions could be drawn. After testing some 13,000 individual fruits, Dr. Harding stated:

"The present minimum State standards do not measure up to



Why Gamble with your crops—and profits

Magnesium deficiency in citrus, and vegetable crops as well, can be most costly—both in quality and quantity of yield. For citrus, why not follow the recommendations of the Florida Citrus Experiment Station at Lake Alfred which stress the need for large applications of magnesium for citrus in soluble form and state that it is usually applied as a sulphate.

Play safe with BERKSHIRE'S EMJEO*

(80/82% Magnesium Sulphate)

For many years this dependable source of soluble magnesia has been a favorite primary plant food of Florida growers—along with nitrogen, phosphorus and potash. Used in combination with Muriate of Potash, it is usually more economical than other forms of potash and magnesium.

**Act now ...
specify fertilizer
that contains EMJEO**

Be sure that your fertilizer manufacturer includes EMJEO in your mixtures as a dependable and economical source of soluble magnesium.

*Trade Mark Reg.

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what the consumer desires in citrus fruit. Invariably, the consumer wants a riper, more mature fruit."

In the chemical analysis, Dr. Harding and his associates found that the palatability of the fruit was closely correlated with total sugar (soluble solids) content and the ratio of sugar to citric acid.

Throughout the research, the scientists were interested not only in taste standards, but also in nutritional values. Citrus fruits are important in the human diet, since their acids result in alkaline reactions in the digestive process, and because they are rich in minerals and important vitamins.

By 1948, after 13 years of research, Dr. Harding was ready to assist the Florida citrus industry in bringing the State's citrus code up to date. Although the demand for modernization of the code was not unanimous and, in fact, became a controversial issue in Florida political circles, the research findings became the foundation for the Florida Citrus Code adopted by the State Legislature in 1949.

Maturity standards in the new Code provided for higher minimum levels of sugar solids in each of the fruits and also minimum ratios of sugar acid, depending upon the date of harvest. This ratio was written as a sliding scale, permitting a slight increase in acid content as sugar content increased later in the season.

In addition to these two important criteria, the law provided for minimum volumes of juice per box and minimum exterior color requirements.

In actual operation, the Code makes it possible to maintain a uniformly desirable quality for Florida citrus products. Administered by the Florida Citrus Commission and the Florida State department of agriculture, citrus fruit cannot be shipped or marketed unless it meets the minimum maturity standards outlined in the Code. These maturity standards must be met before harvest and are later checked and certified by USDA inspectors.

The Commission and State department of agriculture also develop and administer grading, packaging, and labeling rules, and correlate citrus research and promotion in the State. This work is financed through fees charged to producers and shippers.

Wide acceptance of the new maturity standards by all segments of the Florida citrus industry has re-

sulted in minor improvements in the Code and the addition of other fruits to the list since 1949. While the maturity standards are still far from perfect, they do represent an important step forward for the Florida citrus industry.

Leaders of the Florida citrus industry point to at least four major developments resulting from the improved maturity standards, coupled with the work of the Federal Marketing Agreement Program.

1. Consumer confidence in Florida's citrus products has reached new heights.
2. Grower prices are more stable and dependable.
3. Marketing of the citrus crop is more orderly.
4. Consumers are buying a more nutritious product at higher levels of consumption than ever before.

For Dr. Harding, official recognition of his contribution to this progress has come in many forms and from many places. Last December, he was awarded a Certificate of Merit by the Agricultural Marketing Service "for sustained superior performance in the conduct of valuable research studies on maturity standards and measure-

Listing Of Soil And Water Conservation Needs Is Under Way

Gainesville, Fla.—The first inventory of soil and water conservation needs is now under way in Florida by county, state and federal agencies.

L. M. Hollingsworth, executive secretary of State Soil Conservation Board, says the inventory will be helpful to farmers and ranchers in preventing flood damage, halting soil erosion and providing water sources during droughts. These are three big problems in the state, he says.

Agencies cooperating in the survey are Agricultural Stabilization and Conservation Committee, Agricultural Marketing Service, Agricultural Research, Agricultural Extension Service, Farmers' Home Administration, Forest Service and the Soil Conservation Service.

Mr. J. M. Weir, Gainesville, is chairman of the State Conservation Needs Committee, and is handling details of the inventory.

ments of Florida citrus . . . which have led to improved quality and marketing of Florida fruit."

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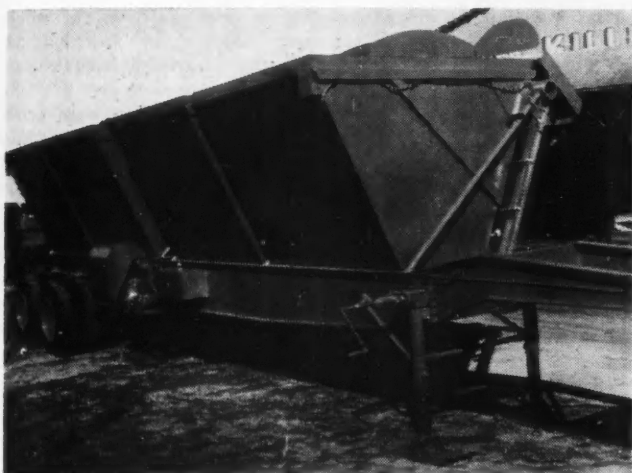
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Federal Citrus Crop Insurance Program Is Extended...

Lakeland, March 2—Despite the fact the cold weather this winter is going to cost the federal government approximately \$750,000 in payment of claims for loss of citrus crops insured under the Federal Crop Insurance corporation, the program is going to be extended for the coming season to Lake county.

Florida Citrus Mutual made known today it had been advised of the extension in information from D. H. McCollough, state director, with headquarters in Birmingham, Ala.

Up to now, citrus crop insurance has been available only in Polk and Orange counties, plus small portions of Osceola and Seminole counties handled through the Orange county office in Winter Park.

So far, McCollough reported, the federal agency has processed almost 400 claims and awarded almost \$400,000 for citrus losses. The actual figures are 189 claims in Orange county involving \$184,592.60 and 186 claims in Polk county involving \$183,172.12.

"It is, of course, impossible accurately to estimate the corporation's losses," McCollough advised Mutual, "but it appears they will run close to \$750,000 in the two counties."

He said the insurance agency had received notices of loss from practically every one of the policyholders in

both counties, involving 943 grove units. Claims are being handled at the present time on early and mid-season oranges, he said, with inspections planned as soon as feasible on late oranges and grapefruit.

Federal citrus crop insurance has been available in Polk County for almost 10 years but for a much shorter period in Orange county. It

has been the policy of the federal agency not to extend its operations into a new area until assured of a sufficient number of policyholders to make the program practical.

Polk county operations are in charge of Harry K. Highman, with offices in the livestock pavilion building a short distance south of Bartow. Orange county is handled by Thomas A. Moore, at the offices of Town 'n Country realty firm, 1222 West Fairbanks avenue, Winter Park.

The new Lake county area is in charge of R. O. Cornell with offices in the Pioneer building in Tavares.



COVER THE TOPS — Spray through thickest foliage with Speed Sprayer's New Oscillating Volute

In the thickest, heavy "shouldered" citrus foliage, or at the tops of large trees, you'll get thorough spray coverage with Speed Sprayer's new grove oscillating volute attachment. The oscillating blades direct the air stream in an up and down motion that causes the foliage to rise and fall. This foliage movement opens up the branches to provide top penetration and through-the-tree coverage never before possible. The volute may be purchased for either right or left discharge. Ask your Speed Sprayer representative to demonstrate the new volute attachment on the Speed Sprayer sized to fit your needs.

FREE HANDY CALCULATOR

Send now for the handy calculator for figuring concentrate or dilute spray solutions. It's FREE!

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John BEAN

**LANSING 4, MICHIGAN
ORLANDO, FLORIDA**

Division of Food Machinery and Chemical Corporation

Our readers who may be interested can secure without without cost an 11 inch by 14 inch color reproduction of the Florida citrus grove scene shown as part of the DuPont de Nemours color advertisement in this issue of the Citrus Industry.

The reproduction is the proper size for framing.

Anyone interested in securing this color picture may secure it by writing to Product Information Service, E. I. DuPont de Nemours & Co., Inc., Room 4012, DuPont Building, Wilmington 98, Delaware.

A short course in garden and lawn maintenance for home owners will be conducted in Broward county each Tuesday night from April 15th to May 31.

CITRUS INSECT CONTROL FOR APRIL, 1958 . . .

(Continued from page 4)

sprays on grapefruit and Pineapple oranges with satisfactory results and no signs of any injury to young fruit or foliage.

Chlorobenzilate gives a quick cleanup of purple mite and Texas citrus mite, but does not give long control. However, the mixture of Chlorobenzilate and ovex should give quick and lasting control of rust mite, purple mite, and Texas citrus mite.

Chlorobenzilate is a good substitute for sulfur and is suggested for use on a trial basis. This material is available as a 25 percent wettable powder or 25 percent liquid. Suggested dosages are 1/2 to 1 pound or 1/2 to 1 pint per 100 gallons of spray.

Scale Control: Purple scale built up to very injurious numbers during the spring, summer, and fall after the 1940 freeze. The current situation is very similar in many respects. For example, as in 1940, the live scale on partially to completely defoliated trees is confined to the live bark, twigs, and leaves on the inside of the tree where they will soon be hidden by the new flush of growth. There is going to be a heavy growth of suckers and other inside foliage that will be ideal for scale development. The total effect will be plenty of succulent inside foliage for the scales to develop on, plus plenty of shade from the new canopy to protect them and hide them from view. So look out for purple scale this year.

Post-bloom is not the best time to apply scalcicide spray unless two scalcide sprays, one post-bloom, and the other in the summer, are planned. This year, however, the application of two scalcicides would be a good idea where live scale are now numerous. For this purpose there are three scalcicides and a choice of several programs.

The choice of a post-bloom scalcicide should depend upon the scalcicide planned for the summer application. Because two oil sprays are harder on trees and have more effect on fruit quality than one, oil emulsion should not be used in the post-bloom spray if it is planned for summer. In this case, parathion at 1.0 pound or malathion at 3.0 pounds, per 100 gallons are preferred. These materials can be used with copper and sulfur for scales, melanose, scab, and rust mite; or with zineb for scales and rust mites. Neutral nutritional compounds such

as zinc and manganese can be used in both combinations.

Where parathion or malathion are planned for the summer scalcicide, oil emulsion may be used in the post-bloom sprays. It not only will control scale, but will also control purple mite, Texas citrus mite, and six-spotted mite, and will help to spread the copper and stick it to the new foliage.

Purple Mite and Texas Mite Control: Both purple mite and Texas citrus mite are expected to be more of a problem during the post-bloom period than they have been all winter. Whether to control them is the big question. Neither purple mite nor Texas citrus mite do any serious damage to healthy vigorous trees during the post-bloom period as long as there is an adequate supply of soil moisture. These mites will scratch the leaves of such trees and even give the foliage a dull grayish appearance, but they will not cause any serious amount of leaf drop. Therefore, as long as there is plenty of soil moisture, it is not practical to attempt control of purple mite and Texas citrus mite on trees of this type with materials like Systox, aramite, and ovex. The amount of control or the amount of serious damage prevented per dollar spent is not justified because these materials are not very effective at this time of the year. On the other hand, oil emulsion, will give satisfactory control. Use oil emulsion at 0.7 percent actual oil where scale is not a problem or 1.3 percent actual oil for combined scale and mite control.

Purple mite and Texas citrus mite control is a different matter on small trees, trees that have lost a lot of foliage, and trees that are in a weakened condition for any reason. Mite damage is more serious on trees of this type and control with Systox, ovex, or aramite may be worthwhile if the use of oil is not desirable. Do not use aramite or Systox in alkaline solutions and do not use ovex in the same grove more than once a year.

Six-Spotted Mite Control: Although six-spotted mite occurs on oranges, it is most frequently found in large numbers on grapefruit trees where it may cause severe defoliation and even fruit drop. This mite occurs first on rough lemon sprouts and around colonies of purple scale on old leaves. The mites increase in these locations, gradually spread throughout the old foliage, and then move to the new flush of growth where they do the most damage. Control measures should be applied as

soon as they are found on the new foliage or preferably when they are easily found on the old foliage.

Most miticides give satisfactory control of this mite if applied thoroughly. These mites form colonies on the under surface of the leaves where they are hard to hit with the spray. Only thorough coverage of the lower leaf surfaces will control them. Lime-sulfur at 2 gallons per 100 gallons of spray, oil emulsion at 0.7 percent actual oil, 1/2 pint of Systox, 1 pound of ovex, or 2/3 pound of 45 percent aramite should give satisfactory control.

Greasy Spot Control: Post-bloom copper sprays have frequently been very helpful in controlling greasy spot. Such sprays are not sufficient for year around greasy spot control, but are a valuable supplement to the regular summer spray.

Aphid Control: Aphids are not expected to be a general problem this year, but they may be injurious on some Temples and young trees. Several materials with aphicidal properties are available. These are lindane, malathion, parathion, nicotine sulfate, Systox, and TEPP (tetraethyl pyrophosphate). These materials should be applied according to the manufacturer's directions before the aphids have seriously curled the leaves.

Details of spray schedules and the various materials used will be found in the "Better Fruit Program" and this should be consulted to determine which material may or may not be combined. For further information, consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.

Michigan Apple

Growers Visit

Florida Citrus

The Michigan apple industry, having heard of the pattern established by the Florida Citrus Commission to preserve "the quality and integrity" of the industry following severe freezes of the past three months, sent a delegation of growers to Florida for a firsthand inspection of the industry. The tour began at Commission headquarters here today.

Some 21 Michigan apple growers, including two officials of the Michigan State Apple Commission, today heard Homer E. Hooks, general manager of the Florida Citrus Commission, outline steps taken by the Commission to protect "the quality and integrity" of the Florida citrus industry and its reputation in the markets. The Citrus Commission made all arrangements for the tour.

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Reports Of Our Field Men . . .

**SOUTH POLK, HIGHLANDS,
HARDEE, DeSOTO AND
SARASOTA COUNTIES**
C. R. Wingfield
Avon Park, Fla.
Phone Glendale 2-81881

With the Top Dresser application on and the young trees unbanked and fertilized we can now almost tell to what extent we were damaged by the severe colds. Many young trees, as well as the older ones, are killed and will have to be replaced. Others have varied degrees of damage and where there is green wood there has come a very good growth and bloom. To what extent this bloom will set is yet to be seen. Where there was very little wood damage there is a good healthy bloom on the old wood and no doubt this will set.

Because of the dead wood found in most all trees a nutritional spray is a must for the protection of the new growth. Most growers feel they will follow this program.

The valencia crop has been moving right along and a great deal of the damaged fruit has been salvaged. Fruit with only a slight damage is holding well.

The vegetable growers continue to be troubled with heavy rains. Some have reported as much as 6 inches and this with a drop in the temperatures on the night of the 15th did not help growing conditions.

HIGHLANDS AND POLK COUNTIES

J. K. Enzor, Jr.,
P. O. Box 1364 Winter Haven, Fla.
Phone Cypress 3-4716
R. E. Lassiter, Jr.,
1168 Lakeshore Blvd.
Lake Wales, Fla.
Phone 3-3813

At long last we have begun to have Spring weather. It was a long time getting here, but now it seems to be in full swing.

We are experiencing an extremely heavy bloom on groves which were not defoliated too heavily in the cold weather. Those groves which suffered bad defoliation are not showing too much bloom yet. Only time will tell how much

bloom this type of tree will have this year.

Now is the time to begin applying fertilizer to young trees. Growers should be careful not to apply too much to young trees which have been badly injured. It would be better to apply a little less than is necessary at this time and make it up later when the full extent of the damage can be determined.

The insect situation is still not a serious problem, however it looks as though the post bloom spray season will start around the first of April. Growers should continue to keep a close check on the bugs. We are anticipating rather serious melanose problems this year therefore it is important that copper sprays be considered on all groves. Melanose not only will drop fruit but it can also injure new foliage.

EAST HILLSBOROUGH AND PASCO COUNTIES

E. A. McCartney
914 River Hills Dr.
Temple Terrace, Tampa, Fla.
Phone WE 8-2852

It is a wonderful feeling to be able to write something good about the weather for a change. As of this date, March 16th, it looks as though spring is here to stay. We have been checking groves and finding what every one knows now that it is not as bad over all as was anticipated.

Young trees were hurt the worst and those that came through will require time to recover. Large bearing trees are in good condition but of course lost a lot of fruit. We are about through the application of top dresser and will follow this with a good balanced fertilizer in May and June.

NORTH CENTRAL FLORIDA

V. E. Bourland
Winter Garden, Fla.
Phone 107

We are having some very nice cool Spring weather. Trees are beginning to look like life again. Where they have foliage, there is a good heavy bloom, and growth.

It isn't going to be very long until you will know what trees you will have to pull out, or cut back to the trunk.

Still moving grapefruit and cleaning up mid-season oranges. Some Valencias are moving but they are not passing the test yet.

Truck farmers are still planting and trying for a late crop. Melons growers have had their troubles too. They have had to plant several times. Cold and rain has killed lots of plants that came up and there has been lots of seed never sprouted.

Cattlemen are beginning to feel better since the grass is getting greener.

SOUTH HILLSBOROUGH AND MANATEE COUNTIES

Eaves Allison
P. O. Box 365, Sarasota, Fla.
Phone Fulton 8-2611

This winter we have missed war and pestilence; but we've had the rest — flood, famine and freeze.

Here on the west coast area hard luck took one more whack at us after we went through all the freezes and floods the season had to offer. We had a cloud-burst! Four and a half inches of rain fell in a couple of hours — and that almost did it. However, there are still crops growing and groves blooming and fields coming up out of the water.

There will probably be some good crops yet and a good citrus yield and anyhow — that good Lyons Fertilizer will be right in there helping to put size and quality into whatever is left.

I have done quit predicting!

SOUTH HILLSBORO & NORTH MANATEE COUNTIES

Jack Baxter
1510 South Habana
Tampa — Phone 82-6554

It appears as though that good old Florida weather is back again. I certainly hope so, but there does seem to be a chill in the air as of the date of this writing.

The valencia crop is being harvested and the prices seem to be very good. In the past week the bloom has really begun to come and it appears those using Lyons Fertilizer recommendations are getting a bit more of them.

ADVERTISEMENT — LYONS FERTILIZER COMPANY

*Uncle Bill Says:*

One of the smartest fellers we ever knew used to say when things had gone sort of tough with him, "Well, thank the Lord yesterday's over with, so I'm starting today to git ready fer tomorrow" . . . and the funny thing about this feller, while he took just as many and just as bad bumps as anyone else, he seemed to snap back quicker'n most of us.

So it sort of strikes us that a lot of us citrus fellers who took it on the chin this season might jist as well fergit about yesterday and start today on the job of makin' our situation a lot better tomorrow.

Personally, I don't feel a bit envious of the folks who came through the cold spell with jist a little damage, 'cause if it ever happens again maybe I'll be the lucky one.

They's been a lot of forecasts which comes from men who ought to know who predict that fer a lot of growers the next 5 to 10 years ought to be mighty good years, from the standpoint of money receipts, 'n we'll bet our shirt that instead of discouragin' folks goin' into the citrus business they'll be the biggest demand for nursery stock they has bin in a long, long time.

'n by the time this young stock comes into bearin' there'll be lot more people who'll be anxious to buy citrus fruit and citrus juice than ever before, which will furnish a good market fer whatever citrus Florida kin raise.

We bin doin' all right fer quite a spell on our little old citrus grove and we figger they ain't no reason to git discouraged about it . . . so we're goin' to git the benefit of Lyons Field Service men's advice and keep fertilizin' with Lyons Fertilizers so we kin raise Maximum Crops of Finest Quality.

The Big Job Ahead

Many citrus growers are faced with the tremendous task of renewing foliage on their cold damaged trees so that they will be in condition to produce a crop of fruit next year. At this time most growers have planned a cultural program and are actively pursuing it—groves have been fertilized, sprayed and cultivated. The big job ahead is that of pruning out the dead wood which resulted from 25 days of freezing or below freezing temperatures that occurred during December, January and February.

Based on our own experiences in Florida citrus groves and our own interpretation of the literature on this subject, we offer certain specific suggestions: The following references are included for those who may wish to read a more detailed discussion: Dr. H. H. Hume's 1957 revised edition of *Citrus Fruits*; Extension Circular 116, written by Dr. J. F. L. Childs of the USDA Horticultural Station and published by the Agricultural Extension Service. This circular does not deal specifically with the treatment of cold injured trees as Dr. Hume's book does, but it contains sound advice on pruning citrus trees; Volume II of *The Citrus Industry* by Webber and Batchelor and published by the University of California Press.

Make Haste Slowly

The cardinal principal in treatment of cold injured citrus is to avoid pruning too soon. Logical reasoning brings the conclusion that the tree has already had a severe shock and nothing would be gained by forcing a second shock upon it, too, relatively few people can tell the full extent of injury for several weeks or months following a freeze. It has also been noted in reliable reports, that trees pruned soon after injury do not make as satisfactory a recovery as those left until the first flush of growth has "hardened-off".

After carefully observing a great portion of the state's citrus plantings, we noted that freeze damage ranged all the way from completely killed trees (the above ground parts) to trees with no damage. In the light of these conditions, few broad statements can be made that will apply to all groves. Instead, each grove, and in many instances, each tree, will require a close examina-

... By ...



FRED P. LAWRENCE
CITRICULTURIST
FLORIDA AGRICULTURAL
EXTENSION SERVICE

tion before the pruning operation is begun.

Severely Damaged Trees

Trees that are frozen to the ground level or nearly so, may be treated in one of several ways:

When a good clean cut can be made well back into live tissue of the scion, and still have good scion wood remaining, (at least 2 inches), the stump may be shaded or painted and allow to sprout. Under this condition it is a good practice to delay further pruning until all sprouts have "hardened-off"—then prune out all but the uppermost two or three,

brace them and train them (by future pruning and trimming) into a new tree.

When no scion wood is left alive, the trunk should be sawed off at ground level—or slightly below—and stump grafted or allowed to send up suckers which may be thinned and budder later on. It is a good practice to thin to only one or two sprouts, depending on the size of the stump.

In writing on the treatment of similar trees, Dr. Hume points out that low cut stumps may be slow in starting growth and suggests that cultivation or exposing the crown roots by pulling the soil away with a hoe will frequently stimulate the stumps and cause them to respond.

Trees With Considerable Injury

If a considerable portion of the trunk is uninjured, the damaged portion should be cut away with the cut made well back into live wood. Under these conditions it is well to cut below the uppermost two or three healthy looking sprouts on each branch—the usual tendency is to leave too much damaged wood that looks as though it might recover. While every inch of mature wood that can be saved should be saved, it is false economy to let a poor decision force a second pruning operation. Trees that have been cut back to heavy wood and have little or no foliage to shade them should be protected by a whitewash or similar coating. Trees with no foliage on them should have scaffold branches protected at this time with a whitewash even though they are not currently being pruned.

Trees With Slight Injury

Many trees lost a considerable portion of their foliage and much of the periphery wood but did not suffer severe injury. These trees present a special problem in that, if left alone, they may produce some

❖

SOUTHERN DOLOMITE

PALMETTO, FLORIDA

PHONE: BRADENTON 2-1411

❖

fruit but they still contain too much dead wood to ignore. It seems logical that trees in this category should not be pruned until late summer but in no case should it be delayed until next year. If sufficient fruit is present, it should be protected from melanose infection. (see spray schedule, 1958).

Brace Sprouts

Trees that have been cut to the ground as well as those that have been severely "buck-horned" will need special care in addition to the original pruning. Sprouts from near ground level or the main trunk of the tree will need to be braced. This can best be done by driving a steel rod or treated board into the ground immediately back of the sucker and tying it to the brace as is done with young nursery trees.

Sprouts appearing on a "buck-horned" tree should be hedged or clipped and be made to grow rather than allowed to become "willowy". Toward the end of summer, a wire may be placed around the outside heavy shoots, drawn tight about them and tied. This will lend support and help prevent splitting.

Disposal of Brush

Where considerable heavy brush is being trimmed off, it is best to remove this from the grove immediately. Delay may well result in the brush becoming entangled with grass and weeds which makes it very expensive to move.

For expert information on care of pruning wounds as well as the principles of good pruning, we quote from Circular 116 as written by Dr. Childs:

CARE AND HANDLING OF PRUNING WOUNDS

One of the most frequent and serious mistakes in pruning is the failure to do a neat, smooth job in the first place. Careless operators often leave projecting stubs of branches that seldom even callus over. In time such wounds may become overgrown by bark but that usually occurs long after gummosis, heart rot, Diplodia, or a combination of these diseases become established and done considerable damage. Painting a poorly pruned stub only delays infection; in time the bark will die back, exposing unpainted dead wood to infection.

Principles of Good Pruning

The underlying principle of good pruning is to take advantage of the natural growth tendencies of the tree so that wounds may heal over in the shortest possible time. It should be remembered that the larg-

er the wound the longer the time required for it to callus over and the longer it must be protected. Furthermore, a wound that is most nearly flush with the adjacent bark surfaces heals most rapidly. On large branches, it may be necessary to make a preliminary cut to remove the branch and then a second cut to bring the wound surface to the desired flush condition. It is usually desirable to make a first cut underneath the branch and a finished cut from above to prevent splitting of the wood or tearing of the bark. At times it may be necessary to smooth off the wound with a chisel.

Wound Dressing and Coatings

It is apparent from the above discussion that making a properly executed pruning cut is only half the job in pruning. It is equally essential that the cut be covered with a suitable wound dressing.

For wounds such as occur in topping or shaping trees it is sufficient to paint the cut surface with an asphalt emulsion dressing. This type of material is ideal for the purpose because when fresh it can be thinned with water to any desired consistency but after setting, it is completely impervious to moisture. Also, it remains slightly plastic and thus allows the expansion and growth of callus tissue.

When diseased wood has been removed in the cutting it is important to apply to the new surface a good penetrating disinfectant such as Avenarius carbolineum. If the wound is allowed to dry through exposure to the air for several days, penetration of the disinfectant will be improved. A carbolineum-treated wound will remain water repellent for several months but in time moisture will penetrate it. Therefore, a final coating of asphalt emulsion should be applied within 30 days.

If the job is worth doing at all, it is worth doing right, and the cheapest way is to do it right the first time.

CITRUS CROPS . . . AS OF MARCH 1

(Continued from Page Eight)

market totaled 14 million boxes compared with 13 million boxes a year earlier. Processors have used 36 percent more grapefruit than at the same date a year earlier. Approximately 70 percent of the U. S. grapefruit crop is harvested and 75 percent of the Florida crop.

Weather


The cold weather in Florida continued into February with temperatures averaging 11 degrees below normal for the first three weeks, but during the last week of the month a warming trend set in which brought temperatures up to normal. Heavy rains occurred throughout the citrus area the last week of February. During the period of cold weather, high winds and low humidity prevailed. California citrus trees are budding and in many Southern California groves, oranges are in full bloom. Texas experienced low temperatures in mid-February, but there was no serious damage to the new bloom. Trees were blooming profusely the latter part of February and will continue into March. Heavy rains during late February were especially helpful.

GRAPEFRUIT BEST EVER

Florida citrus may have suffered from severe freezing weather this winter, but the seeded grapefruit being sold in the North now is the finest ever.

That's the glowing opinion of a Detroit housewife in a letter received by the Florida Citrus Commission.

"For years, yes a good many, we have purchased grapefruit, but none as good as are coming up from Florida at the present time," she said enthusiastically. "Last month we had huge Duncan white grapefruit with seeds that were really tasty. At the present time the fruit is a little smaller, but still very good."




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Mutual Says Grapefruit Forecast Is Too High

The following statement has been issued by Robert W. Rutledge, general manager of Florida Citrus Mutual, in connection with the U. S. citrus crop forecast:

"We still think the U. S. forecast on Florida's grapefruit produc-

Classified Ads

SUPERIOR CITRUS TREES — Guaranteed against freeze damage. Inspection of nursery invited. Most varieties available for June and Fall planting. For quotations call Glendale 2-7541, or write **WARD'S NURSERY**, Box 846, Avon Park, Fla.

EXPERIENCED MAN to top work 20 acres of 15-year old pineapple trees to navel oranges. Advise basis of charges including cutting back old trees.

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NEW CROP HAIRY INDIGO SEED—high purity and germination, early or common (late) \$25.00 cwt. Pensacola Bahia \$22.00 cwt. Common Bahia \$16.00 cwt. Free Delivery on 1 ton or more.

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YOUR GROVE DESERVES THE VERY BEST — Personally selected buds on large lemon root. Grown on high sand land to exacting standards for old time hardiness with today's high production. Jim Crump Citrus Nursery, Phone Cypress 3-2958, 551 Avenue O SE, Winter Haven, Florida.

Completely reconditioned CASE GROVE TRACTOR . . . like new! Fully Guaranteed. \$1500. Call or write **POUNDS TRACTOR COMPANY**, Winter Haven. Phone Cypress 3-3159.

LEAF ANALYSIS: Analysis for nitrogen, phosphorus, potassium, calcium, magnesium, boron, manganese, iron, copper, zinc and molybdenum . . . \$15. Write for details to Dr. Wolf's Agric. Labs. 2620 Taylor St., Hollywood, Florida.

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CITRUS ESTIMATES - MAR. 1, 1956 (Released by U. S. Department of Agriculture Mar. 10, 1956)

COMPARISON OF MAR. 1, 1956 ESTIMATES WITH ACTUAL PRODUCTION FOR PRIOR YEARS

	Actual Production*			ESTIMATED	
	1953-54	1954-55	1955-56	1956-57	For 1957-58 (At Mar. 1)
ORANGES					
U. S., All	125,870	130,345	132,715	131,905	113,235
Florida, All	91,300	88,400	91,000	93,000	85,000
Early & Midseason	48,000	49,500	48,700	51,600	52,500
Valencias	41,100	36,400	39,500	38,700	31,000
Templets	2,200	2,500	2,800	2,700	1,500
California, All	32,400	39,140	38,770	35,900	24,500
Early & Midseason	14,460	5,340	15,170	15,400	9,500
Valencias	17,940	23,800	23,600	20,500	15,000
Texas, All	900	1,500	1,600	1,600	2,200
Arizona, All	1,170	1,130	1,150	1,290	1,320
Louisiana, All	100	175	195	115	205
GRAPEFRUIT					
U. S., All	48,370	42,170	45,280	44,780	40,800
Florida, All	42,000	34,800	38,300	37,400	32,000
Seedless	21,900	20,500	20,600	21,600	18,500
Other	20,100	14,300	17,700	15,800	13,500
California, All	2,500	2,400	2,410	2,400	2,300
Texas, All	1,200	2,500	2,200	2,800	4,000
Arizona, All	2,670	2,470	2,370	2,180	2,500
TANGERINES					
Florida	5,000	5,100	4,700	4,800	2,400
Total U. S. Citrus	179,240	177,615	182,695	181,485	156,435
Total Florida Citrus	138,300	128,300	134,000	131,200	119,400

tion this season, which was not changed in the March estimate issued this afternoon, is too high.

"There have been many indications from the start of the season pointing toward a lower grapefruit crop than the U. S. has been forecasting. We believe conditions resulting from the freeze make it extremely unlikely that 6,000,000 boxes of grapefruit will be harvested from now until

the end of the season.

"Because of the several freezes which occurred, the actual pick-out of Valencia oranges is still very difficult to determine. Under circumstances resulting from the freeze, the U. S. orange forecast becomes something of a "guesstimate," and certainly no one has the information seriously to question its accuracy at this time.

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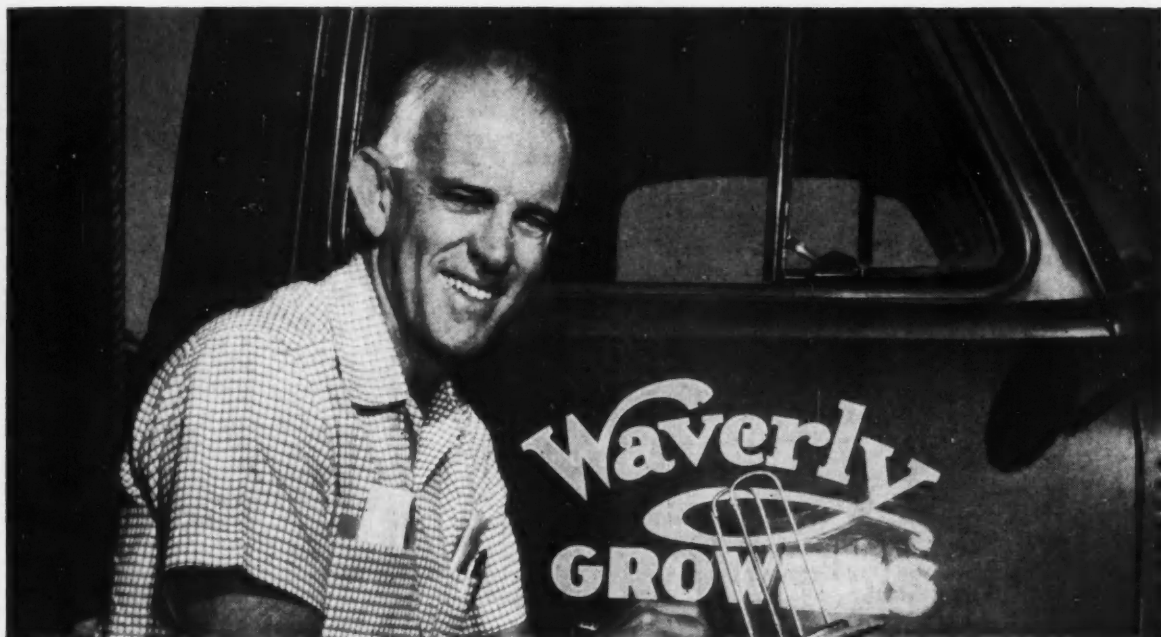
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